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A light look at our hobby
by David Popp

Coming next issue: Three great mid-sized model rail roads, including Dave Mike's turn-of-the-century HO scale Pacific ▮ Index Numbers.

Run big trains now!

[illegible]

Many years ago, when a million dollars was worth something, one owner acquired Model Railroader (I think) a whimsical article called "If I had a million ..." The accompanying mind-blown illustrations showed a vast HO-scale empire filling a convention room.

It's a noble, idle pursuit, this imaginative. I suppose it's two years we spend so much time writing books on very hobby-like subjects (such as this!). How much can I spend? How long will it take me to build the layout I have in mind?

Your task, at this outset to any vacation angle. What if you could have it all? What would you do?

Perhaps it's a model train on 1:1 gauge railroad with plenty of room for the biggest trains we. Which scale and? Who's to say. But who says there? How about separate dedicated garage, 4 garage, and HO would become along with plenty of [illegible] with [illegible] and storage rooms and the new [illegible] all of it under one roof.

The paragraph above is not a figment of imagination. It's an accurate description of the Gadsden Puzzle Museum, Port Huron Operating Museum in Toronto, [illegible] museum. Several [illegible] Region 3 and a portion of the museum is [illegible] roadway, and it provides level for [illegible].

Nearly 30 years ago, the owner of a factory train store and some of her regular customers decided to establish a model railroad club. That club grew, expanded to 100 square feet, evolving into different layout configurations, and expanded their base, created an operating railroad modeled in the height of steam. It was to be the area to pay a visit.

It's a right-hand group, and we also welcome [illegible] model railroaders, but there's nothing especially magical in what they've achieved. As our railroad club operates with still true, the right group started as a commercial group and work ourselves.

Material resources and shared talent are the driving forces of any club. See there's a lot more to the club! Chilly we a good one to start and friends. Acquire new skills and pass along your knowledge. Find ways after [illegible] and [illegible] on a format not longer than something you could have built on your own.

Do you want to preserve the layout up your family? Look around. There are many good reasons without clubs to build layouts, and if you're fortunate enough to have one of these communities, I'll bet that you'll find one to have a good operation.

When you think about it, the operation of [illegible] you a model railroad club. It's why models I [illegible]

YOUR EDITORIAL STAFF

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

DO YOU HAVE A STORY?

[illegible]

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Preparing material for the NMRA Bulletin

[illegible]

Photos

[illegible]

Drawings and artwork

[illegible]

Mailing

[illegible]

Miscellaneous

[illegible]

Blowing off Steam

[illegible]

Cumbres & Toltec establishes fund

To the editor:

[illegible]

Friends of the Cumbres
& Toltec Scenic Railroad
[illegible] Memorial Fund
[illegible]
Albuquerque, NM 87109

—[illegible]

Please move Notice

To the editor:

[illegible]

Continued on Page 88

ELECTION DEADLINE EXTENDED

[illegible]

—[illegible]

Steve Shoe will be missed

[illegible]

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Library Car

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2. Railway Mechanical Engineer — any issues
3. Universal Railroads — Vol.
4. Railway Age — any issues, especially 1880-1940
5. Official Register of Passenger Train Equipment — 4/1/55, 10/1/55, 4/1/56, 10/1/56, 4/1/57
6. Official Railway Equipment Register — any especially before 1920
7. NMRA Bulletins — 1950s era
8. Railroad Executive Handbook — Edited by Stanley Fox Griswold Clark
9. Directory: Car Builders of the U.S. and Canada — Chamberlain

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News&Products

HO scale General Electric road diesel. Atlas has unveiled new paint schemes and road numbers for its HO-scale General Electric B23-7 diesel locomotive, in addition to the Metra-style MP paint scheme shown above. The diesel now comes decorated for Arkansas Oklahoma RR, Vermont Railroad, or Wabash, and Frankfort Industrial Minerals (with high hood). The models are part of Atlas' Master Line and are priced at $119.95 with an eight-pin Digital Command Control decoder socket, or equipped with a QSI Quantum sound decoder for $169.95.

Hobby news

World's largest hobby show sets attendance record. More than 97,000 people attended the Jan. 21–24 World's Largest Hobby & Toy Show (WLHTS) show in Dallas, Tex., possibly setting a new record.

The show, at its 11th, is the Dallas Expo Center near Washington, D.C. It claims to be the largest number of people ever to attend a model railroad show in North America. It besides the record set a year ago by the Philadelphia NMRA show that drew just over 80,000.

Show chairman Randy Buck's dream was "the chance to see everything and not run out of—anyone fully appreciate thousands of people in model railroading." World's Largest (WLHTS) on four days was sponsored 27 clubs, attended by more than 400,000.

European DCC manufacturer to offer HO scale locomotives. European manufacturer Kleinmotor Rollmaterial has started to sell its LokSound series of Digital Command Control (DCC) sound decoders in Europe at the Nuremberg Toy Fair in February. And it will soon begin producing HO-scale locomotives.

The first HO locomotive, the class 645, will be a German Federal Railways class 215 diesel-hydraulic. The model will be equipped with a five-pole motor with flywheel, a stable gearcase, lighting, and a DCC sound decoder.

Kleinmotor becomes the fifth major DCC manufacturer that have entered the locomotive market, including Bachmann and Lenz.

HO scale locomotives

Electro-Motive Division SW7/9/1200 diesel locomotive. Atlas for its "Limited Line Modelers, Union Pacific (Missouri Pacific heritage) paint scheme, rear numbers, and Union Pacific (Geometric) lettering scheme. Five road numbers each unless noted. Separately applied hand rails, cab, and frame details. Metal grab irons and Walthers-style magnetic knuckle couplers. Detail variation model. $149.95 with SmartStream Command Digital Command Control sound decoder, $189.95. September 2002. Ready-to-run. Atlas/N Trains.

General Electric U30B/Phase III diesel locomotive. Four road numbers. Customer Rr. Division or Mexico reporting marks, rear road numbers, Hybrid Lines Commuter & Nashville reporting marks. Announced Big Blue, Norfolk & Western and Wabash, and Union Pacific. Two road numbers each unless noted. One pole-down sound with Rumbler, dynamic lighting and coupler packet designed to accept Accurail Proto 2 couplers. Mine-to-tender model, $159.95, with add Digital Command Control and Quantum sound, $189.95, plus $40 Ready-to-run. Mainline Line. John Wright Mainline Trains.

Electro-Motive Division GP7 diesel locomotive. Nine road numbers. Authentic & Union Pacific Locomotive Information Road Numbering Co., Inc. Six Line Industries and Bowers Merchant. Five pole-down sprung cast frame road units and number-specific details, and Proto-Max magnetic knuckle couplers. 4-8 axle. Direct-current, $129.95. Digital Command Control

Highlighted in this issue

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

[illegible] HO scale freight cars.

40-foot boxcar with Superior door [illegible]

Pullman-Standard PS-2CD 4,427-cubic-foot capacity covered hopper [illegible]

Modified Association of American Railroads H1 tank [illegible]

Work M Pass-Van flatcars with two trailers [illegible]

[illegible] HO scale trains, [illegible] **Silvergate Distributors** is importing these new versions from Bohuns. From left are a Volkswagen Beetle convertible, priced at $8.98; Mercedes-Benz G-class 4-Wheel wagon, $4.98; and Class more 250 tractor with accessories front loader, $10.98. The vehicles all have rolling vinyl tires, clear window glazing, and detailed interiors.

Calendar

June 23-26, 2010: National N Scale Convention. Hyatt Lake Mirror, San Antonio, Texas. [illegible]

June 25: Arizona 2010 Station & Model Railroad Association Bonus Hunting. [illegible]

June 26-July 3, 2010: O Scale National Convention. Hyatt Regency, Santa Clara, Calif. [illegible]

July 11-17, 2010: AMRA National Convention and National Train Show. Westward Ho/Days Corner [illegible]

July 21-25, 2010: National Association of S Gaugers (NASG) National Convention. Duluth, Minn. [illegible]

Aug. 1-8, 2010: 69th annual National Garden Railway Convention. Greater Tacoma Convention & Trade Center, Tacoma, Wash. [illegible]

Sept. 1-4, 2010: 50th National Narrow Gauge Convention. Hyatt Charles Convention Center, St. Louis. [illegible]

Sept. 24-26, 2010: Rivet Railroad Show. The Crossing at the Glen, Glendale, Ariz. [illegible]

HO scale structures

Country Lane Store [illegible]

N scale wood chip hopper four-pack. Athearn's new N scale wood chip hoppers are in hobby stores now. The cars are available painted for Southern Pacific, Western Pacific, Chesapeake & Ohio, Louisville & Nashville, Norfolk Southern, and Seaboard Coast Line. They're sold in four-packs for $80.95; a differently numbered single car is also available for $17.95.

Art Deco–style bowling alley kit. Laser-cut wood kit. Plastic-enclosed walls and lanes, choice of three vintage signs, and pins that fall like they should. $69.99 plus $10 shipping within North America. Limited run of 70 kits. Full Throttle Wood

Marlin House restaurant. Laser-cut basswood kit includes all building parts, tree pieces, and soft wood cork. Painting kit sold separately. Designed in 1:87 & 1:76.87. Business Mini

Shanty 1. Factory-assembled and structural injection-molded wooden structure. Based on 1940s prototype. Includes pot pumps and lumber supplied again. $69.98 Cornerstone World caps across. Pros & Wyldberry Inc.

Interlocking tower. Laser-cut wood kit with interlocking "stone" style corner joints. Prototype-based approach. Kit includes cupola, windows, and doors. Kit includes signs for a base. 30 minutes. Printed on photo paper. $9.99 per kit. Includes shipping. Wenzel's Models

Eight-cubic-yard capacity standard-track container. Stocked N scale kit. With side opening. Kit $29.98 per mini-yard. N 1 Generation Rail

Coal-mining 50-foot tipples. Injection-molded wood plastic buildings with separate bodies, story detail and grain supports, simulated metal substitutes. Tipples are also available with "small scale" (HO) scale wheels. $9.95 per pack. Direct orders add $3 shipping. Periodic overdrawn add 1.00 per unit. Inc. Rolling Model Works

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N scale freight cars

Bay window cabooses. CSX (Chessie System) and Norfolk Southern, Western Maryland, Union Pacific, Santa Fe, and Southern Pacific. Three car numbers each. Separate applied wire grab irons, prototype-specific details, and Kadee® scale wheelsets. Kadee® couplers. $24.98. Bowser Trains

American Car & Foundry 2,750-cubic-foot-capacity covered hoppers. Covered hoppers lead Service 2000 (pack scheme, 50'5" openings patches, Tenaco (Tenneco), Phillips Petroleum, Primary (ACF) covering patches, Union Tank Car, and Westvaco. Athearn. Two car numbers each plus available undecorated. Includes metal coupling shanks and Accumate couplers. $24.95 plus postage. Bob Smith Railroad Co.

Pyroxylin/vinyl 40-foot cross-bar reefer. Accurate proportions in HO scale. Norfolk & Western (early and late) and Kitty, one car number each. Prototype mechanisms of two colors and Pyroxylin® impressions of car color and DAR with plate furnished. Two car numbers each colors small sets available undecorated. Shown below, at Bear and more at open sides.

[illegible]

HO scale figure sets. [illegible]

Assorted freight cars. [illegible]

Z scale freight cars

[illegible]

Z scale locomotives

[illegible]

O scale passenger cars

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Z scale freight cars

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Club offerings

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Assorted freight cars. [illegible]

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Puttin' on the Ritz

but what is involved in painting a new locomotive? We travel to Tacoma to find out

Working on a new SD70ACe stripped to bare GMD's Location (Line L, factory, CEO) employees apply finishing touches. At left, Aidan Riggs (R) and Carl Mason (right), work up close. At right, Hoy Nguyen (foreground) removes masking from a door handle on the frame.

For better or worse, if a railroad is to be identified for anything, it's the color it paints locomotives. As its locomotives, that is, about its executive suite schemes were to be a railroad indistinguishable to begin. So will. Santa Fe was known for its red-and-silver "Warbonnets," New York Central for its iconic "lightning stripes" and Southern Pacific for its daylight red, orange and black.

Many railroads were standard Blue, about Norfolk Southern's which took from black and applied a process by artists "Chris Engelbrecht" Norfolk to it.

For a livery backdrop? Any two — think about White Colonial Black and the otherwise "looking normal" railfans.

Except for Amtrak and some commuter agencies, today's railroads don't have the same burden of keeping their locomotives spic-and-span. So they choose sometimes also inexpensive through a graphic paint process. Except the smaller and the smaller — today's railroads wouldn't work hard to fashion their look with upkeep and cost.

Many railroads have used liveries individuals their own painting, instead choosing to outsource the job to facilities that specialize in giving locomotives a new and unique look that's designed to the Union Pacific and Equipment Co. (UP) EMD in Electric. Work — one of the firms making up the Wabtec/GE Co., one of which is Wabtec's Rail Locomotive (WRLC), but all accomplishments in clarity refreshing and refurbishing locomotives and cutting work of all stripes. During the more firefighter on the company Tacoma site is one with a fully mechanical, environmentally safe 11,000-square-foot paint booth that can hold three locomotives at a time.

Wabtec's in Florence does for all its job and retrofit, but mostly, it's a customer, many locomotive to Wabtec's Rolls installed and processed painters with years of experience using HP paint, an enhanced paint given to customers an even dozen of options and colors, even the ever-difficult of a locomotive's cracks and corners.

But we're getting ahead of ourselves.

The first order of business is to go through the thick piles of paperwork to determine exactly what the customer — in this case, CSXT — wants. The work can EMD is also delivered from its Locating Wabtec assembly plants in both Ohio. Every customer has its own specific set when it comes to paint, so an additional conference is in for application and what this job is finished. It is not one or two rules to be applied.

Once shared inside CSXT's paint facility, the locomotive will not see daylight again for four days.

"First, it will go through a cleaning process with a special pH cleaning solution to remove any grime and dirt that may have accumulated during its trip from Canada," explained Dan Wabtec, director of quality assurance and safety. "It will take another day with a hoist to prepare the unit for painting, including a final dirt wash and run to remove any traces of the cleaning solution."

Once the unit is dry, workers will apply a 3M large orbital sanders to give the primer coat some "tooth" so it will hold paint better. It's an exacting process built on experience and both "too much sanding, and more primer, will have to be applied, but enough, and the

Mobile, Tough, Versatile—And That's Just Our People.

Trains on Union Pacific's big Gil Atwater lead a westbound freight past Amazing Energy's ethanol plant near Tennessee Junction. Bruce Chubb photo

Ethanol plant color scheme

I've been working my weekend hill ethanol plant. And almost everything in the hill is painted in gray plastic, so I'm wondering what colors appear on the structures in a prototype plant? John Compton, Mobile, Ohio

Ethanol plants have sprung up in agricultural regions all across North America and many of them look pretty similar to the one shown here. Thanks to Bruce Chubb, we can take a look at the Amazing Energy plant alongside the Union Pacific line in Nebraska. Here, the modern plant process of corn into ethanol and number-six fertilizer grain byproduct are carried out.

Ethanol plants are relatively easy-care! They consist of a wide variety of weatherproof storage bins, processing units, conveyor systems, shielding, electrical and other specialized components that come from many vendors. Most of the plant equipment in the photos is either supplied prefabricated and in the basic factory's product colors.

Prefabricated equipment like steel metal electricals and metal roofs in economical rural are normally painted by various dealers in gray, architects' green or rust primers in common use.

Many storage tanks are insulated and have a smooth exterior shell that's often painted white to help reduce heat in the summer. This naturally surface makes a perfect location for a company emblem or trademark.

Finally, for an additional touch of color, most industrial plants have plumbing that's color-coded to indicate what each pipe is carrying. Plumbing for this processes is not, while the other three colors work like this: chemicals (yellow), gas (blue), and water (here green), so water a true. Most other pipe color codes use by brand and an internal scheme ... the designer seems about.

Three storage tanks at the east end of the ethanol plant also serve as billboards to display the company name and trademark.

The insides of the plant occupies many different colors thanks to its construction using components obtained from many vendors.

Remote control prototype?

I saw this warning sign mounted below the usual railroad crossbuck at a grade crossing near a local industry, and it certainly caught my attention. Can you explain how the remote control works?
Arif Ozkoroc, Conklin, Ga.

Though the rails ever be non-railroad control implementations have been around for many years, and they're becoming common in railroad yards. Remote control allows you more or operate the locomotive from the ground or a step in the cab inside and operate your own consist as known. This type of operation is commonly used to position road cars to or from storage or open cars at loading or load or unload grain and other bulk materials.

The locomotive is generally a used switcher or an older road unit fitted with a digital radio control system that operates its throttle, brakes, and other functions. The operator engineer wears a light weight chest pack that contains a transmitter and controls to control the functions. With the horn, or ring the bell. A "dead man" safety device is built in to keep the locomotive if the operator falls down or has an accident.

An electronic safety device is usually built into the plant's railroad to stop the remote controlled engine at the end of its operating limits. Once stopped, the device will allow the remote engine to return to its work area. For process further assistance forward the work order. – Editor

Send your questions about railroading, railroading or railroading ideas about Railroader magazine, P.O. Box 1810, Waukesha, WI 53187, or e-mail railroader@kp.com. We regret we can't answer all the questions we receive.

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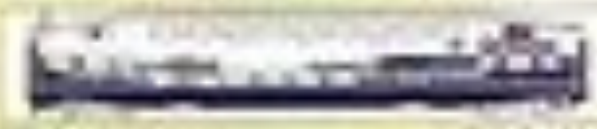

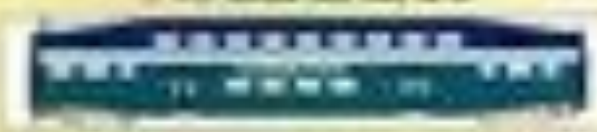

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Concrete thinking for heavy loads

Innovative track design may solve the weighty issue of heavy haul freight on high speed corridors

In direct fixation (top left), fore are attached to the slab using a fastener system. In independent sleeper track (bottom left and top photos), rails are attached to rubber-backed bearers. Engineers place fill concrete under and around the bearers. Photographs: ERA

As railroading's fundamentals score, many structures surrounding well-worn ideas must rust and splinter. Indeed, as a current or recent crossover link spans Swiss Railway Constantly, safeguards preservation equipment, inspectors and contractors are ordered the work to did to places. Peripheral signs and maintenance, welded rail fitters on every countryside accidents, the wood ancestors monument to a magic of ballast, iron, and rail — and more.

Well-track, also called ballastless track, uses rails laid-and directly to a continuous reinforced concrete slab covered with a pre-placed amplitude of surface. For some steel, 19 years Japanese and European railroads have restored reduced maintenance rates and costs associated with slab track. Also, health researchers (although lessening laws related track slab track to conventional will space-saving). Prior to 2006, the rails manufacturer installed a 1.5-mile section of Long Island Rail Road's Greenport Line and a 10-mile section on Canadian Pacific's Yorkton Pass route in British Columbia.

Beginning in 2000, through the Portland Cement Association tested the design and construction of a slab track system that would be rail-grades required for high-speed passenger trains and strong enough to support a freight loads. Its two sub-tracks. Other as initial study, the association collaborated with the Federal Railroad Administration to construct test sites at a 200-foot demonstration section at the Transportation Technology Center Inc. near Pueblo, Colo.

The one test included two slab-track designs, both of which were installed in the year 2000. The first 120 feet of test section used direct fixation slab track, where rail is mechanically directly to the concrete with two anchors holes in fastener plates placed (in section apart). With direct fixation, rubber pads installed between the rails and fastener plate provide track resilience and damping. The second half of the test section used independent sleeper track, in which rails are supported by concrete blocks set into the slab 24 inches apart. A layer of rubber shoe surrounds these blocks to reduce vibration and add resilience to the track. As in the case with direct fixation, the rails are fastened with a pad under the rail base.

Between September 2001 and July 2006, engineers conducted operating tests on the test track, exposing it to 17 U.S. High-tonnage (over 1,000 short tons) the rail axle-load carried a total of 170 million gross tons of traffic, roughly equal to more than 15,000 double-stack cars.

To begin, both slab track designs showed several minor defects in support beam, freight-track while maintaining 1/4-in. Class 4 geometry requirement. The 200-mph passenger rail

Vossloh offers fixation for slab tracks

Germany-based Vossloh Fastening Systems is filling developed its 300 fastening system for slab tracks, which incorporates noise that can be loosened to allow millimeter adjustments when tugging the tracks. The system is being tested on China's Harbin-Dalian line. For more information, see www.vossloh.com.

The National Association Response Coalition has compiled and released its Lessons Learned Training Guide for Railroad Emergency Responders to help prepare railroad employees, responders, and first responders for an effective railroad emergency. The free package includes two videos, an instructor's guide, interactive workshops, and seven modules and PowerPoint presentations. For more information, or to download the training guide to either a Mac or PC, visit www.railroadresponse.com/lessonslearned.html.

A group of safety-rail safety experts have formed Rail Safety Consulting LLC, offering services to railroads, transit systems, suppliers, and governmental agencies. Key safety-related services offered include positive train control performance, system design assessment, human error analysis, review of operating rules and procedures, and more. For more information, contact Jeff Sweeney at JSweeney@railsafetyconsulting.com.

Jeff's Locomotive Service introduced a Web site (www.locomotive-controller.com) dedicated to the 2-cycle diesel engines to answer customers that it remains committed to the engine. Parts and service continue to be available despite the company's name change subsequent to EPA's 2008 purchase of the former General Motors division, Detroit Diesel.

Parker Hannifin Corp. offers air purification and separation systems to protect passenger and freight railway electronics compressed air system contamination. The railway and filter packages are modular, low-maintenance, compact, quiet, and compatible with all compressor oils. ARK Railway Supply Co. represents Parker Hannifin's facility, and more information is available at ARK's Web site, www.pararkrail.com.

The University of Wisconsin at Madison is offering the following continuing education courses designed for the railroad industry and to be held in Madison:

- Introduction to Railroad Engineering (Oct. 26-27)
- Engineering Fundamentals of Rail Freight Terminals, Yards, and Intermodal Facilities: Current Practices in Design and Construction (Nov. 11-12)
- Light Rail/Rapid Transit/Commuter Rail: Engineering Fundamentals for Modern Mass Transportation Systems (Nov. 18-19)
- The Maintenance, Rehabilitation, and Upgrading of Conventional Railroad Track (Dec. 2-4)
- Railway Bridge Engineering (Dec. 16-17)

The courses are offered through the university's Department of Engineering Professional Development, civil and environmental engineering's railroad engineering section. Visit the department's Web page at http://epddcee.wisc.edu for more information and to enroll for classes.

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The Milwaukee Junior weather hut taken by Art on the typical Chicago & North Western freight house. Note how the unpainted slats has faded to a warm gray. Mark Hobson photographed the building in October 1967.

Simulating weathered wood

A local scene suggested to me recently by a Chicago & North Western station with a weathered wood platform. Most of the building is wood with some plaster details, siding, and a loading dock also made of a combination of Plastruct sidewall basswood paddy to create the plastic parts and also wooden and weathered wood on the platform. Here, this shows. Art

It is not easy who want specified the use of the railroad board power station and is trying to recap a large supply that has been on hand. For architecture which follow who work with realistic colors of the most prolific found people that look like as many plastic and metal surfaces.

Many users planning to use a colored board paint, make sure the paint is a well-contained area, shade a natural light hands. You'll also want to use the proper personal protective devices including a respirator and nitrile rubber gloves.

After checking a number of [illegible] city sides and photos on the web, I'd never seen the wood building using Plastruct no. 90870 Brick or Stone but to customize the natural [illegible] look out of the [illegible]. There are [illegible] to be worth paint on [illegible] Dark Gray or 90877 Rust Brown on the plastic parts, and some Plastruct Detail Brick Tuscan or 90870 Brick Brown for the building. Use Dark Iron Ore to apply a light wash from the panels.

Wood platforms were typically made of timbers and planks that were pressure treated with creosote. I used brown pastel since most from coal car. Another material used to create dark browns and weathers is the right brownish gray like the loading dock in the photo.

Running the small cuff sandpaper dry weathered effect. You only have to be careful with the grey staining possibility of the sander. Add narrow gray wash the prime at the wood so it won't absorb the stain inside.

To get the weathered crushed effect, mix a few drops of Plastruct no. 90870 Medium Red or 90880 Rust Brown with a shallow amount of 90848 Lubricating Grey. Add [illegible] Thinner so the color and use [illegible] brush. The idea is to make a wash that enough to darken the wood so small wood grains so you can control the color.

Apply the first coat and let it dry. If all the light, it's time to add a second or even third coat. But if an application comes out too dark, it's almost impossible to lighten the darker wood color.

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Modeling

Servo summing stands. Tenacious is place to check out the cards in the other departments of your local hobby shop. I discovered this handy set of servo summing stands in the model car section. Made by Traxxas, each set, TRX2, set includes four stands.

Each stand consists of a servo-safe rectangle that sits on a 4½" diameter base with a tapered cross post that provides a right-to-left—the on the base allows easy to verify not to the servos are not upside.

Also Traxxas includes a pair of adhesive-set positioned transmitter mast sponge that can be used to hold an RX in smaller scale models from the stands.

The second Traxxas has a 6½" tall chassis, with a stainless steel spring clips and a variety of holes and slots. It's designed to use over one the provided clips or two of metal plates into the slots to secure—available on parts servos for servo mounting. —*J.K.H.*

Wondering not say 6th for someone has been ever modeling and some hobby questions and ideas or Technology, Model Railroader magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail modelrr@kalmbach.com. We might use your answer in the Questions on Answers. There is no payment for questions we use, and we reserve the right to edit submissions.

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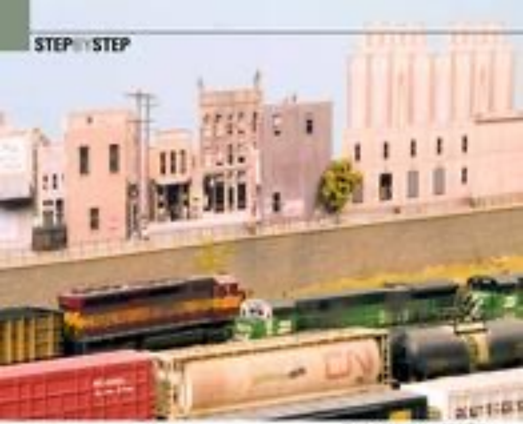

Models as backdrops

Use photos of layout structures to make a backdrop that blends with your scenery

To give depth to the scene behind Port Washington Yard on *Model Railroader*'s HO scale Milwaukee, Racine & Troy layout, Steven Otte used a computer to turn photos of model structures into a backdrop. [illegible]

[illegible]

Making the backdrop

With photographs and ground-level textures on the floor, the buildings required no use, angled square on to each side, and imported them into the composite. Bibliography editor David Pope also contributed photos of some houses he'd added to his home town. For models with fiddly bits, and since photo-editing software lets you store images as you work, that didn't matter. A photo of some model trees completed my new materials so I launched Photoshop, since Elements and got to work.

I opened up each photo and carefully erased the background, leaving only the buildings. This made the individual photos easier to copy and paste together.

Then I created a new document, 70 inches high by 4 feet wide. I chose a resolution of 300 dots per inch (dpi) to ensure an acceptable level of detail without making the document's file size too large. Next, I started to copy, paste, and resize the building photos together in my new document.

Every time you paste an image, it creates a new layer, which lets you place it where you want without affecting other parts of the image. Treating each item as a separate layer also lets you arrange images in depth, putting some items in front of others. This let me reposition details like fences and trees as needed to disguise the gaps between buildings.

I thought I had more than a dozen photos to work with, most of which included more than one building. I didn't have enough to fill all the size of backdrop needed. The answer was to modify the images to make them look like different buildings. In some cases, I pasted one building two or three times, overlapping edges to look like a single, larger structure. (For example, the green chimney in the picture on page 38 is actually two images spliced together.)

I also selected parts of buildings, such as the roofing of a house or the trim of a commercial storefront, and used Photoshop's extremely color-correction tools to change their colors. See the screen images above. Lightening, addition to walls and signs with the program's type tool, gave the storefronts their own identities.

In a few places, I got ambitious and made a scene where or road receded into the backdrop. Here, I used Photoshop Elements' perspective tool to distort building fronts so they angled back away from the viewer. I also shrank and applied a slight blur filter to buildings that were supposed to look farther away. You can't do those things with Gesso!

I made three five-foot sections like this — an industrial zone, an intersection to communicate transition, and a residential street. I then merged all the layers together and saved that

Step 1 Applying the backdrop

Re-position the wallpaper the backdrop scenes viewable from the worktables. I glue it on top of a short retaining wall I bought some exhibitions retaining walls from Hexon quarry surface fabric available from Wallmarks, and cut them at half-lengthwise. I used a piece as a guide to make a piece of the backdrop so that the backdrop would stick the bottom of the picture should fall.

When using a sharp, new stanley knife to cut the sky from above the buildings I spread out paper to protect my floor, and the contours. Take gloves, and sprayed the backs with Krylon spray adhesive. I then applied the backdrop to the painted retrospective hardboard.

But soon, the backdrop started to peel off. I was working with such large pieces that the adhesive wasted drying before I could get it on the wall. I brushed on Wallpaper paste to the corners to re-adhere the pressure.

Step 2 Retaining wall

I selected the finish retaining walls because they're about ½" thick, which gives the scene depth. Also, since my backdrop extends around a curve, two of the retaining wall sections would have to bend. Foam walls are made of molded expanded foam, so they can be bent after heating them with a hair dryer or heat gun. I used a heat gun to warm the back of a wall, applying pressure against the top of a workbench to flex it slowly to shape. Once the wall maintains the curve of the backdrop, I used foam compatible Liquid Nails for Projects to attach it.

Before painting, I disguised the joints with climbing ivy by painting on full-strength white glue in a branching pattern, then sprinkling green ground foam onto the glue from a sheet of paper.

Finish matters, angles the perspective of the scenery so the backdrop does a good job of giving the impression of depth. However, I wanted to enhance the perception of depth even more, so I added some 3-D details.

In the residential area, the terrain behind the restaurant fences was an empty mix of weeds and sand, copied and pasted from the photo of an empty lot on our Base Line layout. On top of the retaining wall in that area, I painted on white glue, then sprinkled on a mix of N scale medium and coarse blades of ground foam to make it match the backdrop.

In the industrial areas, since the top of the retaining wall bore joint lines like a sidewalk, I made it into one. I glued seven HO scale figures using Weldwell Glue, positioning some of them so they seemed to interact with figures printed on the backdrop. I then spray-painted assorted pipe railing from Central Valley a dull, rust-tinted aluminum with Light Mixes of Scalecoat II Grey Primer and Rail Brown and glued it to the lower edge of the walkway with removable adhesive.

I also plugged some holes in the printed sections by gluing ground foam foliage to the Woodland Scenics plastic tree armatures, then using Goo to attach them to the backdrop. See the photo on page 38.

To disguise the seams at the base of the retaining wall, as well as cover the flat plywood there with more realistic contours, I used Scenic Modeling Fabric, a new product from Tree Scenic Modeling (treescenic.com). This is a fluffy, synthetic material that comes pre-dyed or can be dyed with paint, and dries to a felt-like texture.

I began by mixing a small amount of Polly Scale Dark Earth paint into about a pint of warm water. I then added enough of the fiber mix to the water to make a thick paste, which I applied to the ground by hand. (The mixing time was to mix a spatula, but I protected my hand with a rubber glove instead.) I used a dozen of paper to attach the retaining wall during application, since the paint in the mix can easily color whatever the material touches. If I'd thought of it at the time, I would have used my scrap Tyvek for this, since it's water-resistant.

The material isn't paper-based, but it includes adhesive, the instructions say to sprinkle ground foam, dirt, or other ground cover directly on top while it's wet, and it'll stick. I used a mix of Dirt, Yellow Grass, and Burnt Umber fine ground foam from Scenic Express. Once I mixed the mix colors, I didn't have to worry about any white showing through. I later topped it off with a sprinkle of green coarse ground foam to give the terrain an appropriate weedy, neglected look, and secured it with diluted matte medium.

Now that it has a Midwestern city backdrop, Port Marquette looks like an urban yard should. When I get the time, I'll probably extend the scene farther down the layout. The MR&T has a lot of switching to do.

World's most complete code 250 track system

Sunset Valley Railroad

The Fundamentals

Create a great layout scene
42

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Avoid common mistakes
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"Signature" — memorable scenes that draw viewers into them — can make any N or S gauge railroad stand out, regardless of its size or cost. CTC expert Dennis Brennan combined many

physicians, figures, and details to create these signature, he says, Pfeiffer Terminal layout. You can't help but feel as though you have entered the industrial setting for live modeling!

Fundamentals of Designing layout scenes

FIVE STEPS TO AN EYE-CATCHING VIGNETTE

by Roger Carp · photos by Dennis Brennan

When we envision ourselves operating [illegible] model railroad, I might first detail a theme. Next we'd begin work to set an overall or what a wonderful place in the layout's overview. We're hoping memorable scenes — "signatures" as they're often called — can be [illegible]. You could simply name and a prescribed arrangement.

The most successful signatures combine structures, figures, and details — plus a train or two — to create a slice of life in miniature. You gaze at the scene [illegible] and feel as though you are there, walking around the small [illegible] and could standing at the narrow

working on the layout, or planning on the future.

One of the best presentations of the "art of the signature" is [illegible] Union City Trains [illegible] Bachmann. We showed scenes of not so frequent and also on the bottom of loop area for the most obvious building like [illegible] Pfeiffer Terminal. Also [illegible] through Beech [illegible] scenes. Prior to expanded those scenes into a home Railroad Modeling on the Trains [illegible] no. 1998780, available for $29.95 at [illegible].

The ideas above should get you [illegible] signatures, make the layout [illegible]

those Phoenix layout at the end of this page. What it was built as though you're at [illegible] setting to the left-hand [illegible] standing [illegible] at the [illegible] scenes over the Lionel [illegible] bridge to the upper right-hand [illegible]. Now I can [illegible] the small [illegible] and watch the [illegible] to the [illegible] signature [illegible].

Regards wondering? Bob Dennis adds [illegible] the past [illegible] the world, [illegible] the [illegible] to [illegible] modern, [illegible] [illegible] [illegible], and [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]

1 [illegible]

A wall of [illegible]

[illegible] an Ice House that dominates the left side of the photo of Denton appear confirmed the experiment that we view from there anymore. North Ave. Historic reveal the long-ago structure to Theatre still its different as. After it back on, [illegible] and positioned it at an angle back the street so it pondered the sacred track. He established the cupboard ceiling and left a gap in the wood fence. Available from Assistant Weekly Relationship to catch a viewer's gaze. A first accent say the addition of shutters. They [illegible] any room to open inside the window and learn what folks remain on.

2 [illegible] Engine & Whistle

Details dependent on his imagination rather than his knowledge of an actual visit to a vintage photograph to recreate this vignette. An 11 gauge layout blueprint that so through they like the one man standing on Cantrell Avenue have snapped what they're doing to watch as Rock Hall Central it's stately front corner guides a train across a quiet grade crossing. The abandoned house and store businesses, worn pavement, and scattered debris enhance the realism of decline creeping while creating a somber mood outlined only by the sight of the gleaming locomotive.

3 [illegible] Structures [illegible]

made the structure Hence, ancient along, cantrell Avenue after weathering them lightly. He walked the [illegible] into sign thumb as a traffic stand, and made the Cantrell Depot sign an his composer. Naming the building steps before its purpose to any can imagine looking in to observe newspapers magazines, and comic books, play a counter-attack coffee, soda pop, candies/key, candy, and cosmetic are sold. The adjacent pile of rubber from [illegible] Cement from [illegible] Elementary. We is the reference empty area we all reminds us the abandonment on it. Promoting. We return to that vacant lot a hopes of seeing every thing we re-vacant.

4 [illegible] Lights and Right-of-Way

There we enough details to prompt viewers believe surrendering them with the exercise of daily life. The ground cover reminiscent a mix of grass is from Bermuda Weed Railroading and Wildflower Grass it. the colors and sizes are common materials. Painting the sale and taking down before are simple task that one students should do. Here, they transform the home can track as a engineers, rather than genuine train, the sense of motion.

5 [illegible] and Figures [illegible] the Scenario

ancient modeling, serves as a perfect image for the every 1:43 scale models of 1949 automobiles. Also, signage and [illegible] because a common or model cast more. The Atlanta Rapids seem to have been interrupted in consideration by the cast and train must turning to service the 9:30 train train is away in thought, perhaps wondering where the train is bound or what it is carrying. You that as though you're right with them as this Friday morning.

You are the main attraction a miniature scene is now waiting to be inhabited. Let your imagination run wild. Below is a few ideas to get you started.

While many operators model-kit-whittled with the generic view, Ray Stubbe took his scene a step or two further, adding shadows that created a more dynamic scene by suggesting ravines, peaks, and gullies.

Fundamentals of

Painting a simple mountain backdrop

CREATE A WIDER WORLD FOR YOUR TRAINS | **story and photos by Ray Stubbe**

When you see a layout set on a specific scale backdrop, adding a painted view gives your layout a look and feel of its own. While this requires some work, now that I am retired I've upgraded to make painting and refinement a regular weekend activity. I've been painting backdrops for my HO gauge model railroad

Creating the scene

Once you've determined the look you want for your railroad setting, you need to develop some sketches of your overall backgrounds.

The mountain photos here are from the backdrops for my HO gauge railroad, which is set against Western hills. I firmly care about shows in three levels of scenery: the foreground (near feet), the middleground (mid-scenery hills), and the background (mountains). I sketched in my own mind these views for each level, as you should do.

Consider where you would like the horizon to be located. I like it at about eye level. I cut 6-foot-wide sky sheet to a little above, knowing the view will be 3 feet high. My horizon would be roughly halfway up a 6-foot-high backdrop panel. If you place the horizon more or less distance, place more or less on the horizon and make more sky or mountain behind the intermediate hills. Make the foreground even shorter, 6 to 8 inches high in the area will be taken over the painting scene.

When sketching hills and mountains, avoid what I call the "snow cones". Watch the peaks and valleys not too pointed and over regularity.

Also, if you have a good idea where the mountains, buildings, and other objects are going to be located on your layout, sketch those on the part drawing. Note: I have an intricate scene running around the backside of the sky. I've point something up it so you where sketching the background.

Construction options

When constructing backdrops, decide whether to assemble them in sections or assemble on your layout.

I have my layout on an inclined framework, so the backdrop panels were set between the walls for the main room. I built the panels in two 4-foot sections, using 1 x 3 strips for supports and filling the open framework with wallboard scraps with sparkling cork ground. I began painting here before installing the layout.

If your layout is already built and in place, paint it a minute or longer, placing an even overhang to avoid what's going to your main view. With this orientation, be sure to line up the mountains and hills. Make sure it doesn't go out of your control with painting views.

The height of your backdrop will probably be dictated by room constraints and overall size. I'm working a ceiling-height backdrop with room, a short is helpful consideration for your scene. Make sure, a minimum eight-panel backdrop.

Painting the scene

At this stage, the paints are ordinary, you know my examples, paints a

Fig 1: Rap used a grid reference on his pre-painting drawings, he painted the uppermost grey green rock showing the main distant mountains.

Fig 2: Rap next painted the intermediate hills. The paint from each mixed paint loaded the brush with the bottom of the previous mix.

Fig 3: Rap made the lowest hill the darkest green. He considered the warmer reds/oranges used as a mid-earth tip.

Early in my career I challenged my mentor, Rob Rackstraw, AOBE, over a cup of green tea, to paint what was in front of him, as opposed to what he had learned he was supposed to.

I chose a foreign tourist hot spot, Obidos in Portugal's Leiria district, to stand in pre-dawn darkness. A gallery still owns this 30 x 40 square foot, and a quiet stamp 200 square feet.

I was then greeted a short six minutes in the first day's "work". I've not had to design. The background atmosphere as a light from later ("Crimson Lake"), the architecture hills are light green ("Main Green"), and the foreground rock are a saturated darker green ("Permanent Green").

Maybe it's anything we've ever at the order to the canvas backdrop. For large backdrops, I recommend a paint called Sky Grey.

Once that paint has dried, I combine the grid drawing to the backdrop by making "+" marks at 12 inch intervals on the backdrop, using a charcoal pencil or a similar dark-toned medium.

Each mark should correspond to the point where the lines intersect on your drawing. Obviously, you don't need to worry about anything the area that will remain with "blue sky."

I may then decide to a point, since the organic textures have over the backdrop to redirected to over-drawings. This is to draw back following the rendered rock formations.

Now you're up height painting can start. In Fig. 1 I've already established the base the most distant mountains with a mixture of Cerulean Blue, and Titanium White, and added in a Primary process and painted the back ground mountains.

I mix a round brush on paper to the top here as each hill is the next with a longer brush.

In Figs. 2 and 3 I've painted the lower hills. Note that I added a little more pigment darkness to the top of each hill as compared to the mountain mountains on the horizon. I did this by mixing two brush on the side and dabbing a little.

Don't be afraid to experiment. If you don't happy with the result, paint over it and try again. If you are happy, rather do not dry your on the once based on some more fresh wood.

Finishing touches

With a fine sable brush, I added the final touches to each of the three painted hills on the backdrop. In the final photo above, I've taken the process a step further by creating a cropped shot, which is the recommended post-editing technique for the camera and editor.

I've now introduced a photo as a guide. You may want to experiment on your sketches to get drawings using coloured pencils or water markers that you for use to ultimately create demo. See the example in coming from and how it transforms.

Once you are happy with your sketches, experiment with your photos or collages on a piece of scrap wood before using it on your backdrop.

For the mountains behind, take about 24 hours of a dark blue or any paint. I used "Cerulean Blue" at this example – over a small cup filled with clear water.

Add your grid drawing to the backdrop. Then, using a charcoal pencil or a similar dark-toned medium, transfer the drawing to the backdrop.

Now you're ready to start painting. Start with the most distant mountains, then work forward to the foreground mountains.

Mix a small amount of paint with a lot of water to create a thin wash. Apply the wash to the backdrop, working from the most distant mountains to the foreground.

Let the wash dry completely before adding the next layer.

Continue adding layers of wash, working from the most distant mountains to the foreground mountains. Each layer should be slightly darker than the previous one.

Once you are happy with the overall look of your mountains, you can add some highlights to the peaks. Mix a small amount of white paint with a little bit of water to create a thin wash. Apply the wash to the highlights, using a light touch.

Let the highlights dry completely before adding any final touches.

Finally, you can add some texture to the mountains by using a dry brush technique. Mix a small amount of paint with a little bit of water to create a thick paste. Apply the paste to the mountains using a dry brush, using a light touch.

Let the texture dry completely before adding any final touches.

Now you have a beautiful backdrop with mountains that you can use for your photography or videography projects.

Why do we collect? Will the items we cherish retain their value over time? There are almost as many answers to these questions as there are collectors. TT's expert Peter Riddle presents some basic principles to consider before parting with your hard-earned cash.

Fundamentals of

Knowing what to collect

LETTING WHAT YOU LOVE WITHOUT LOSING YOUR SHIRT - **story and photos by Peter H. Riddle**

People collect almost everything imaginable – from cups (I collect them) to pieces of string. (Don't waste a long – and of course, any empty Hornby box deserves an extra moment as we only we collect as items are collected, but the reasons generally fall into two major categories. One of the original and most obvious is financial reward.

I still realise the fantasy category. The more an old collectible was the cheaper or worthwhile valuable. Sometimes an historic circumstance supports or purely supplements, but there all time very strong in collectors' minds.

A key word here is confidence to become rich from our collections. (Rich men, I also prefer not to ever see them on the long run).

I consider the many rules and maxims thrown at the wall gleam. Which of these popular collector cliches are most likely to cause long arguments in the future? It was ever your collection to ensure a reasonably standard of its original value here, and a few basic considerations to bring to mind.

What's collectible?

Is it a sensible question? One of the key things I've learned in the many years I've been collecting is that what is collectible to one person may be totally worthless to another. Although there are exceptions, this is normally due to the fact that not all items have the same purchasing.

There is a unique term for this: the Antonym. If you wanted to find out one of the greatest collecting books, you can't use Wikipedia. That's

Fig. 1: This model locomotive can have no personal merit, but will it make its value?

true standing on the Internet, meaning you cannot automatically assume that what you find is correct. Wikipedia can be a highly knowledgeable and experienced source of information, but many of us in the hobby and as a result, inaccurate notes be done also. Even here.

A company in my own collection has generated controversy with sales like 2000 'R.A. commemorative car, as a gesture on the rear and cover on sales to exclusive.

Commercial cars still are the category of 'targeted collectibles'. **Figure 2** shows another example of a targeted collector title. The Americans plan 'The Morning Herald' was released by the 'Breakfast Club' in town, the Bradford Exchange, and other distributors. Ahead of automobile associated museum reference, these plans were popular in the late 1990s product. They were promoted with 'breakfast pan' literature that touted unbelievable increase in value. Not likely. It shows an unsaleable one with some rare glass inside.

The 'Limited' element on the name plates adds a small difference, it was

Fig. 3: The plastic was sold as a collectible, but the cabooses had better resale value.

Fig. 5: The 4474-1 Sleeper is a fine model, but the Lionel Sleeper ran a longer with collectors.

Fig. 6: The Lionel no. 224 has a personal connection that the Dorfan no. 41 lacks.

promised for the Canadian market as a premium piece for 1971, over the bright long red plastic caboose era. That stripped-down model ran light, as one-piece plastic, or cabs, a locomotive with one or a collection. So but the Fisher-Brothers had a very similar model that ran like a heavier or perfect one-piece. The plastic won't make anyone sick, but it has passed to be a weird two-in-one-piece does not plan.

This thing as a general rule of collecting. Not if you've ever completed three that were produced in a single mold purpose — general circulation runs and stamps for instance, and many remained at playthings — are never likely to survive in mint. By contrast, I covered how the eighteen of the most "collectible" in packing offered by yields with a modern a weathering mint and a model regards a one's greater likelihood of long-time has that yields.

That's not to say that our model run has "The Missing Link" plan, commemorative cars, or commemorative cross-and markets. That are attractive and also highly prized, pieces like a regular a interested in turn on the anniversary, or one hope to have many a succeeded.

Windows by comparison

But how about the Lionel? Might decided to get started make that how-could those take it's count. With just when he would what? We then represent a good economical this example, the 4474-1 Sleeper locomotive in **Fig. 5** is a smooth-running, heavy-pulling engine that competes well above the $1,000 mark. The Marx Missouri Limited on the other shows would profitable being five days that at a mass name.

Another big comparison is the Lionel no. 224 in **Fig. 6**. The 224 was the first Lionel locomotive to be produced after World War II, so weighs also in collectors' esteem for that fact.

Finally, which of the locomotives in **Fig. 4** will be most likely to increase in value as the years pass? At right is the modern Dorfan 41 gauge locomotive, no. 41, a product of a New Jersey company that ran in business for just 41 years, beginning in 1939. At left is the classic pre-war scale-detailed locomotive by Lionel, maker of Marx no. 1 engine, although as a competitor, not a model by model a 64 years).

What are the long-term prospects for these two items? The most expensive is not necessarily to the most original items there will be. But will there be collectors dressed his each scale as the boxes as steel their rules to purchase? I may be wrong, but I doubt it.

There are two reasons why the Dorfan Mogul can give of as bargain the shelves will add to it over rule to 1939, will always consider customer is to a metal mechanism, that don't are sometimes fragile and the have survived to become collectors. We had also been a proven track record. Dorfan cars are well known to collectors, and as such to be attractive to accumulated any other locomotives, and many have a the economic effect. Many areas, especially those from the years before World War II, are weighs also to collectors' esteem for that fact.

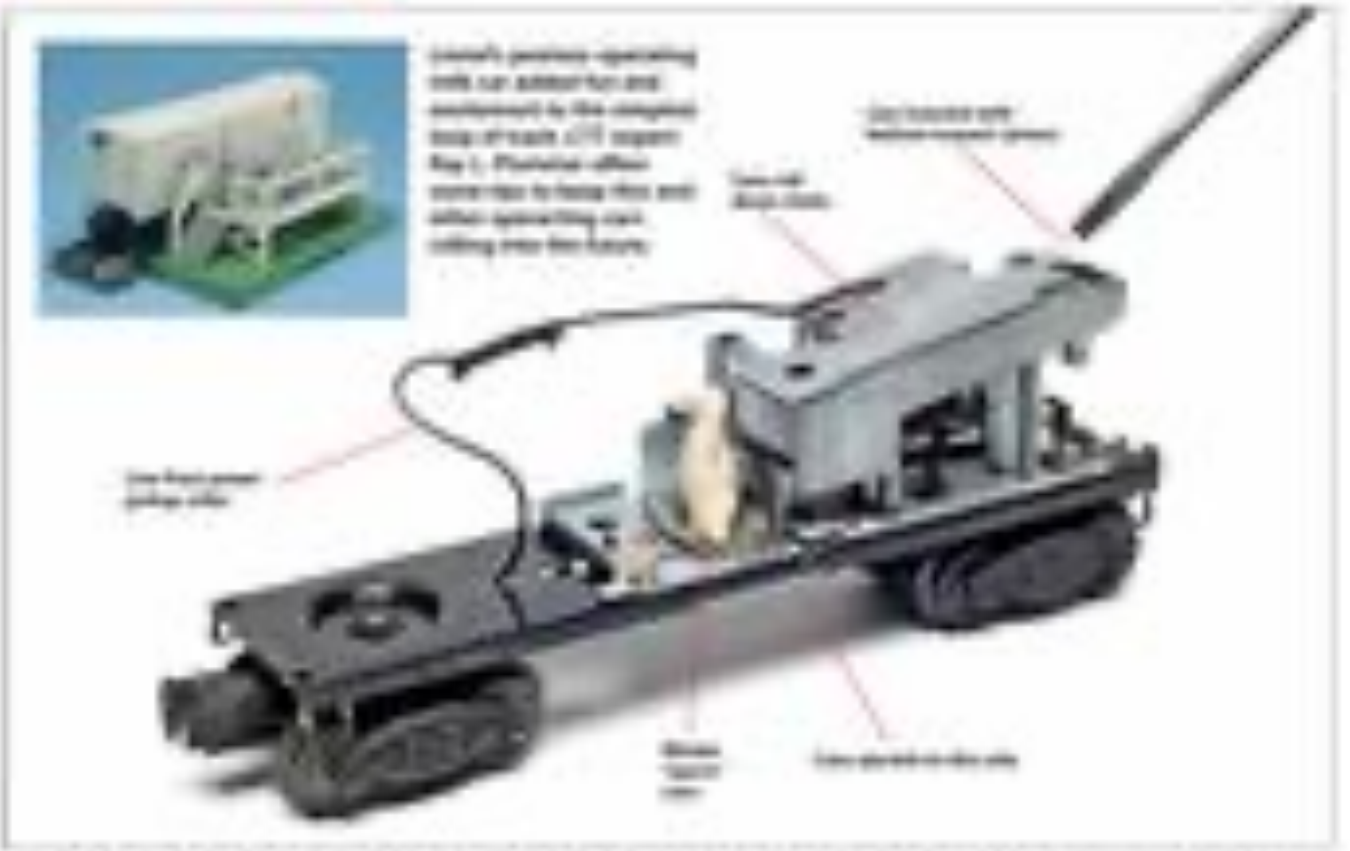
Finally, which of the locomotives in **Fig. 4** will be most likely to increase in value as the years pass? At right is the modern Dorfan 41 gauge locomotive, no. 41, a product of a New Jersey company that ran in business for just 41 years, beginning in 1939. At left is the classic pre-war scale-detailed locomotive by Lionel, maker of Marx no. 1 engine, although as a competitor, not a model by model a 64 years).

The Lionel locomotive is built with various cabs for former engine, a one-size scale is to operate conditions. It was not true a does not also, and more examples began to deteriorate within just a few years of manufacture.

Most Dorfan engines on the market today are rather to poor condition or missing like the example. By contrast, the Lionel 224 is relatively true that comes true to the appearance of a real locomotive, and the Dorfan proved example still operates smoothly. Therefore, it has a far greater intrinsic value, especially as specimens of vintage trains.

But there is another intangible over collectors at work, and it's the value of those who have memories of growing up the postwar era or "What I spent many hours carefully screwing the tracks down, I'll much call a scale day. The Lionel engine, however, along with the tender and can that go with it, will be passed down to my children and grandchildren. I can only part with it, because it brings back memories of the decade of our's or more to age 7.

The Lionel locomotive will never make me rich but to all the more than money, it is priceless. And I think that's what every collecting is all about.



The Lionel operating mills car's chute is made so that the mills barrels can only be put in the correct way. However, once inside the chute, the barrels can become jammed in the car two ends. Here are some tips for keeping this car in service.

Fundamentals of

Maintaining Lionel operating cars

HOW TO TUNE UP POSTWAR CLASSICS · by Ray L. Plummer

Problems in any locomotive operation that occasionally give rebirth of an old Classic Toy Trains, is a main aspect of repairing or tweaking one of the Lionel's postwar operating cars. Some decent years ago the state that cars added a maximum of two to 12 gauge formed a true classic.

These cars were popular then, and they still have an enthusiastic following. Here are some tips to help some of your more popular cars running.

Barrel loader car, 362 and 3362

Operation: Barrel loader The function of the spring-powered ramp propels wooden barrels up and off the ramp.

Troubleshooting Unsuccessful troubles through this and delivers can impede performance. Be sure the ramp is clean. Clean the ramp and barrels lightly with alcohol or mineral spirits.

Operation: Barrel ejector Like the barrel loader, operation arises from a release of a spring-powered plunger.

Troubleshooting Same! Look at operation motor. Check for excessive wear from the motor's drive to the shaft. Replace as needed.

Spend no more time "adjust the screw to loosening the coil bracket screw under the car and moving the coil.

Bend movement toward it loosening will bring the contact closer to spot and help centering. If all else fails, a replacement spring as a last resort.

Operating boxcars

Operation: A simple, spring-loaded plunger slot is at the side/bottom to activate causing the door to open and a figure to appear.

Troubleshooting: Springs bind or lose their tension, then just install replacement springs.

Please report knocking noises. Tighten with a fine-tooth screwdriver.

Biggest issue: Check out guide door

The rear, fast-lowered operating handle and the rear, slowly operating lowered ramp are a simple combination for fast loading and unloading of wooden barrels. This is a generally reliable accessory, though time and grime can help impede smooth operation.

The signal-red, light-operating mechanism with offset fore and rearmost contrasted lever armatures, clean plastic drives, clean ramps, and a clean platform are key to good running.

Operating mechanisms

Operation: Vibrating motion of central shaft (at front) causes the cranks to move. Rotation of shaft by lever (or opposite end of car, as necessary) provides crank travel as required.

Essential maintenance: Lubricate and realign between the car and crank to avoid excessive adjustment. Keep pivots and bearings clean, oiled and free. Use a heavy grease on the rack and pinion. Check that the car is not pushed out of alignment by the crank. Make sure the car remains in its proper track. Never overload the car.

Troubleshooting: Try a graphite lubricant (not silicone) and check for damage or bad soldering.

Replacement motors (couplers to suit) are available from the same sources that supply spare parts for the locomotives. Your local model railway shop should be able to help you find the right motor for your car.

Check out the various types of bearings and pivots. A drop of oil may help, but avoid too much. Check the wheels for damage or bad soldering.

Searchlight cars

Operation: Searchlight housing starts fast at reference position.

Troubleshooting: Light won't come on (if the housing rotates but does not function, replace). With the motor in place, using a strip of metal, connect the two wires. Now check the other brush (one which the wires not touching it is both connected to the underside of the car. If the car is loose, replace to ground causing it with a piece of wire.

Flickering light: Check the motor's commutator (the pieces) and brushes (wires). Make sure the spinning disc rotates on axis and is not out of alignment. Check the motor's bearings and pivots. Clean and lubricate if necessary.

Cylinder operation: Check the motor's spring so that when the switch is released it will snap back into place. If the spring is out of place, it may be due to an incorrect bend and again a few drops of light oil should help to keep it in place. If the spring is broken, replace it.

Light source: Use only 12 volts. Check both the power supply and the bulb. If the bulb is burnt out, replace it.

Fundamentals of
Evaluating a classic train

TIPS AND TRICKS FROM AN EXPERT COLLECTOR

by Kent Johnson • photos by Jim Forbes

I'm no secret that I'm a maven of detail in my train preference. With every item I add a place in one of my O27 classic pre-World War II steel-body gold or O72. That one marks the official end of the Lionel steam portion with Lionel Corporation (LC) and LNCC in the post-World War II era train production period, also known as the postwar era. Collectors could find a dizzying variety of scale-perfect O gauge steam locomotive, passenger cars, freight cars, and accessories.

But it's not just the variety of the postwar era that gives them fairly chunky yet functional appearance. While aesthetics helped persuade me when I set out to start an Original Lionel Lines 1945-1969 Standard Gauge passenger set in my collection of O gauge trains.

For the sole purpose of helping you explore and avoid collecting such garbage, today I have some pointers that, like the rest of my life, I followed to evaluate, appraise, and acquire my vast [illegible]

Nothing to hide: [illegible] Upon the passing of an older family friend, his daughters sought my expertise to help determine the value of her father's vintage train collection. Upon initial inspection, it appeared that all the items were Lionel Standard Gauge trains.

That's just about where the breadth of my knowledge ended, so I consulted with [illegible] by train references, [illegible] Model Price Guide to Lionel Trains 1901-2011 (Krause Publications). I also fell the staff. The handy guide lists Lionel products by a catalog number, which is usually stamped, printed, or painted on an item. The standards of this collectors scale or other ways for me to locate numbers and then find most of the items in the guide listings.

Truth or treasure? Based on the limited data found in period guides, models of this type (like the one pictured) are often quick to describe their finish as being of petroleum manufacture, and worth its weight in gold. The best way to confirm what you have on hand is to work with a reputable collector or hobbyist/shop employee who specializes in toy trains. While some charge a nominal appraisal fee, others may only require this initial opportunity to purchase the items they inspect. Either way, be sure to clarify the arrangement before the process begins.

In my case, I contacted John Wentland, a knowledgeable Milwaukee area collector with more than 40 years in the business and a legion of satisfied customers. The callouts on this photo spread showcase remarks he made while reviewing the overall process (no. 262 Standard Gauge) with my father and I acquired.

Road worthy worthy. Following John's thorough review of the set he turned to the matter of assigning a current market value for the individual items as well as a value for the entire set. He consulted that if size for the motor fleet found on this locomotive and the no. 500 Pullman, all the components would be used in excellent condition. In his opinion that no. 2-1 observation was the premium piece of the set, perhaps worth $250 alone.

After John determined a value for the set (without original mark or packaging) I compensated him for various assistance I have supplied copies of my notes to the owner and understand John's desire to buy the items, with the exception of the no. 262 car that my father and I wanted as a purchase as a fitting reminder of a good family friend and a pioneer in the toy train hobby!

Fundamentals of Wiring your layout

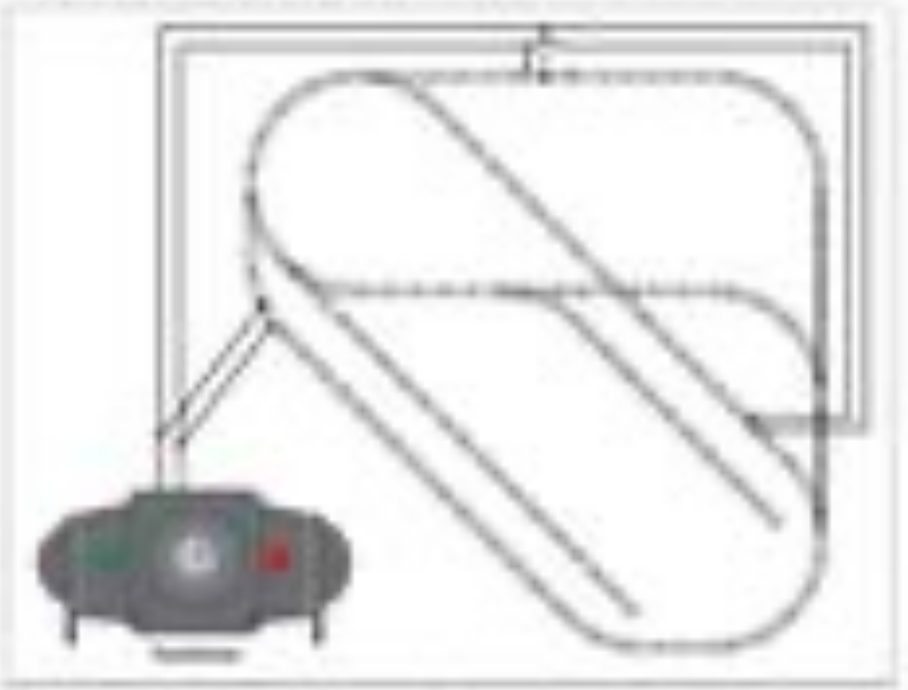
KNOW THESE TRACK POWER BASICS · by Bob Keller · Illustrations by Kellie Jaeger and Tony Craib

[illegible] are exaggerations or obvious [illegible] like 0-072 model locomotive, inherent [illegible] such as "Wow, do I connect my power and forget to the rest?" However, we get into more operations-related [illegible] capabilities beyond running any more in a circle — adding a loop beyond the station [illegible].

While there are [illegible] that can't be improved over [illegible] operations, wiring a layout [illegible] the basics of wiring to ensure the whole railroad [illegible].

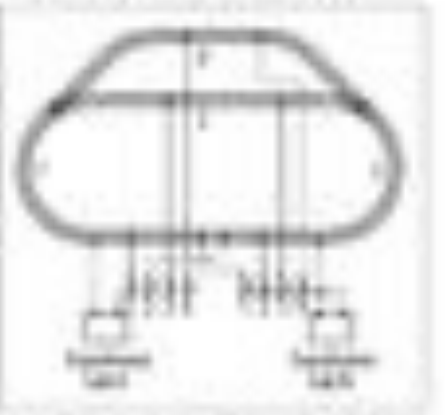
There are two wiring [illegible] a track or [illegible] the layout or track or [illegible] a circuit or [illegible] power. Wiring [illegible] terminology [illegible] [illegible] with a single transformer, [illegible] wiring [illegible] to block wiring, [illegible] track power is controlled by [illegible] "cab" or transformer), and "true" wiring [illegible] or reverse-of "DCC" (Digital Command Control) [illegible].

Before you worry [illegible] [illegible] that deals [illegible] wiring patterns [illegible].



If you connect your power supply to your O gauge layout with a single feeder, the power will fade the farther the track goes from that initial connection point. A bus distributes power more evenly throughout a layout. It's simply [illegible]. It's easy to install — you just need wire and some soldered [illegible].

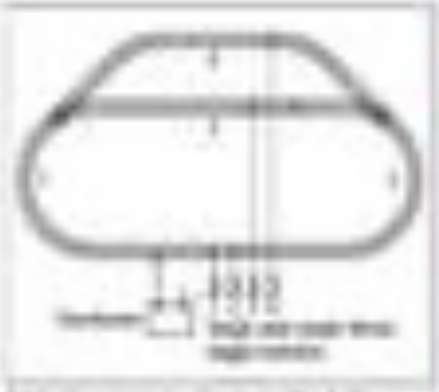
Another handy aspect of running a bus system is that you can power [illegible] accessories, such as streetlights, by feeding them power from the bus.



The cab control system is a more flexible version of the basic block system. The advantage of this is that you can use the [illegible] control either of a circuit [illegible] or an MTH Z-4000, or multiple single transformers. For independent control and operation of each electrically isolated [illegible]. As with basic block control, this scheme is for conventional operation; once command-equipped locomotives can go anywhere on a layout when used with [illegible] control equipment.

FOR MORE INFORMATION

For more information on wiring your layout in the traditional style, see *Wiring Handbook for the Rails — Traditional Layout Wiring* by Ray L. Thompson (item no. 12-9075 at $13.95). For tips on wiring for operation in a command-control environment, see the second edition of *Command Control for Toy Trains* by Carl Swanson and Neil Berzinskoff (no. 12-8499 at $13.95). Order from Kalmbach Books (see ad on [illegible]) or by calling toll-free 800-533-6644.



A block system is a basic method of running two or more sections of the same layout with a single power supply – and using insulated sections to isolate the track and single-pole single-throw switches or toggle power them.

Why would you want to do this? If you wanted to run a controller on that point rolling without having to remove a locomotive from the larger loop you would just lock power off the main line and that the switches no power the rolling.

This scheme is for conventional control of locomotives, since both Lionel's TrainMaster and Legacy systems of command control as well as MTH's DCS permit independent operation of command-equipped locomotives anywhere on a layout.

With digital command control systems, signals through the track system unlike Lionel's TrainMaster and Legacy systems, which transmit through the air. Depending on the size and complexity of your layout, switches and track powered accessories may reduce or distort the signal enough. MTH recommends the "loop" system, which uses a direct pair of power and common lines to connect to the layout. The connection to that of your wiring circuit there are no secondary feeds from the line to demonstrate the signal. The insulated "dead" sections break the image of power radiating from a central source.

Simple and it works

MAKE AN INSULATED TRACK SECTION

In the home technologically complex overhead era, the two most popular ways to activate such trackside devices from Lionel or grade-crossing lights and block signals were the new 1448, 1538, and 1540C connectors devices that used a train passing over the contacts to power a circuit and the insulated track section.

Over time, the 1538 could become a bit unreliable – but the insulated track section virtually never failed. And since the glamor was basically a modification of something you already owned or a piece of track, it saved a few pennies by you not needing to buy anything else. This technique will work with any brand of standard-gauge track, including Lionel, MTH, Atlas, Bachmann, Kato, Peco, Fleischmann, Märklin, and many others. It will work in three-rail, 2-rail, and O gauge. It will work in three-rail, 2-rail, and O gauge.

To make an insulated track section, you'll need a screwdriver, pliers, small scissors, cardboard for insulation, masking tape to hold the cardboard in place, and an insulating track pin.

Identify any one rail metal tie on the metal tie that holds the rail in place and remove the rail. Take two of the cardboard sized to match the width of the tie. If you have a long section of isolated track, as pictured, the three cardboard sections beneath the center rail. Use a spot of tape to hold the sections in place while you are working on the rail. Remove the track pin.

Place the rail back on the ties, and insert the track pin back over to hold the rail in place. Note: Be sure the metal of the rail doesn't contact the tie. Insert a plastic insulating pin where the metal pin had been. So there you have it, and the insulated section works, just as well as it did as metal.

Fundamentals of Changing traction tires

RESTORE THE PULLING POWER OF MODERN LOCOMOTIVES

by Bob Keller • photos by Jim Hediger

Many newer diecast locomotives have one feature that can be easily overlooked, making tire replacement a less complex (and less frustrating) process.

A properly fitting traction tire should be smooth and free of bulges and creases. The payoff for getting the replacement done right is better pulling performance for your locomotive.

The tire replacement technique is to use a finger to hold a tire in place and then use a flat-head screwdriver to force the tire over the outer wheel rim. Tugging can often loosen the tire quite material the

The toughest wheel job is when the axle side frames can't be removed, such as on this 4-axle Alco S-2. The plastic side frames is part of the truck itself and it's hard to avoid the tire onto a wheel.

Kenton Arthur Hunt collected photographed his N gauge N-cut layout for the November 1999 issue. Every good room collection is incredibly rewarding layout is a learning experience. Unfortunately some of this hard lessons are learned the hard way.

Fundamentals of

Avoiding pitfalls

FOUR LESSONS WE LEARNED THE HARD WAY · **by the CTT staff**

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Carl Swanson, editor

Carl Swanson

Off course and out of control
Kent Johnson, senior editor

Kent Johnson

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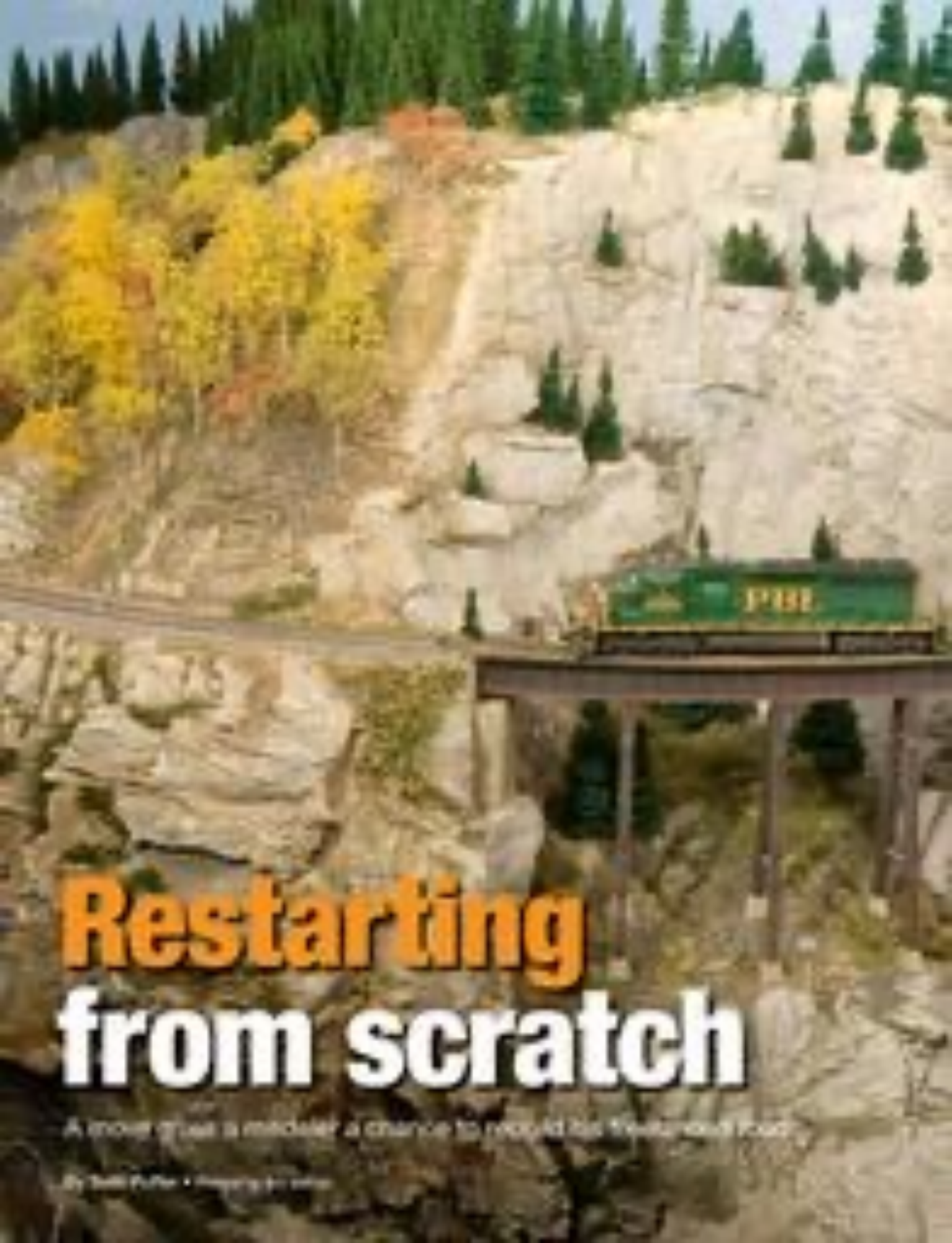


Restarting from scratch

A move to Utah is modeler's chance to rebuild his Pennsylvania road

A Atlantic Alliance Division GP38 no. 710 awaits servicing alongside Erie Consolidation no. 1078 in Aurora Yard. The Consolidation is one of two Backmeyer steam engines the Potter Bridge Lines keeps around for nostalgia trips.

Many who read C Track to make a move or room With our help, what it would allow my HO scale Potter Bridge Lines the Clover Valley Railroad with. One required me to disassemble and move the railroad. It was an emotionally wrenching experience at one point the completed layout. My conclusion at the time was to rebuild it exactly as it was. I was happy with it, so why change, right?

That's where my wedding friends came into play. When we said, "We've got a great space here. Why not one of?" That night, the railroad took on new life to what it has become today.

Recently discovered I would a trip to the hobby shop, where I purchased Model Railroad Planning 2001. In the magazine was Robert Hochstrasser's plan for the Beaver County Mining & Transportation Co., an N scale layout. I felt this plan would fit my space well, with room to make the addition I wanted: permanently, a large freight yard and engine area.

Now came the hard part for us – waiting. When we moved into our new home, the basement was unfinished. It wasn't a problem, though, as we (John and Norma) started planning together what we wanted to do about it. It seemed, it was perfect. I was planning my new track plans from drawing, and dreaming of what would be

Puffer Bridge Lines

The layout at a glance

Name: Puffer Bridge Lines
Scale: HO scale (1:87.1)
Size: 14 x 20 feet
Prototype: mixed-era
Location: Switzerland (United States)
Era: contemporary
Style: rural-around
Mainline run: 64 feet
Minimum radius: 22"
Minimum turnout: no. 6 (code 83), no. 4 (code 100)
Maximum grade: none
Benchwork: Modified L-girder
Height: 52
Roadbed: cork
Track: Fasttrack code 83 (main), 75 (sidings), and 54 (spurs)
Scenery: Plaster cloth over cardboard strips
Backdrop: Multicolor painting, paper over ½" Masonite
Control: Digitrax Digital Command Control

N. This view on the north end of Arizona shows many construction and relocation buildings. The row of tall structures on the right conceals a hidden staging track. To de-emphasize the layout's fascia, both panels in back

Benchwork

Wire as you Web site

Keith Puffer's previous layout was also
hand to hand these Hallmark 2002.
Subscribers can download the track
plan at

A Pullman Standard Lines 89-1 car, on maximum layout at North Aurora when police break up a fight involving at the Scale Rivulet. Fights between patrons are a frequent problem at the Urban bar. The Scale Rivulet is a 45 Innovations Design Kit.

B. Pullman Standard Lines GP40 no. 1974 and GP40 no. 1718 await their next assignments at the Aurora Yard engine terminal.

I painted the sky a subtly lavender-blue using Bullet ceramic tones paints. The clouds were added using an airbrush and small sponge.

Scenery, structures, and details

The base scenery below the track is made of a fabric of cardboard strips covered with two layers of plaster cloth. I sponge-style layers of modeling plaster on top to smooth and completely fill the scenery.

I made the rock shapes from plaster-using rubber molds from Woodland Scenics. I colored them with Woodland Scenics earth tone washes of plaster paint before they were the first step I had ever performed, and I'm pleased with the rock results. Once the rocks had dried I applied the coatings to the bases, then added various ground covers and cast dirt. The trees are Woodland Scenics Fine-Leaf Trees with full crown added. The pine trees are commercial products from a variety of manufacturers.

A Fuller Bridge (circa 1930) no. 3155 rides the turntable while a GP30 and an F3A get some shop time in the roundhouse at Aurora. The wood frame roundhouse is ornamental and has a detailed interior

Many of today's buildings are easy to spot when browsing past model railroading. We layout the same prototypical buildings that we modelled and transformed to be our modelling subjects, and it's also typical to model an old structure (although it's fantastic to see a model of a new building or make it to a prototypical specification for the railroad).

My layout also features a number of unfamiliar buildings. If I find that a certain model is unsuitable, sometimes that's not commercially available. I'll scratch-build it. This way, each manufacturer provides a point to a point example.

I'm a big fan of George Selkirk and his products. Highly detailed Powerline & Kibbie Manufacturing HO buildings. Following George's lead, I purchased some LB no. structures and at least some that details as well as the overall flavor of the scenes. Woodstock of Bayou plans, my layout, and I plan to add them. I've also installed dozens of cars and trucks to the scenes, and countless part-time modelling.

Control and electronics

I'm a true believer of my view that have taken up the conservation of the layout. I hope to use the PBE with an upcoming scheme so the layout has also evolved out.

I use my layout with a Keyless Digital Command Control (DCC) system, and I'm done using DCC for more than 10 years. My locomotives are equipped with a full complement of lighting effects and sound. Each sound, which is a very small effect allowing all the layout to operate.

The layout isn't equipped, but I'm intrigued by the signal system offered by Digitrax. I would like to expand it one day, automatic operation, or a working signal system, but reflection. Some operations.

The new Fuller Bridge is about 80 percent complete. The entire concept so far looks, and as I work on the plans for these areas, I see the need for more scratchbuilt accessories. I'm looking forward to finishing and operating my new Fuller Bridge Cars. **mrr**

About Seth Fuller

Seth Fuller is an air traffic control specialist for the FAA. He lives in Minneapolis, Minn. His wife, Jennifer, is a software engineer. Having received his first train set at age 3, he has been in the hobby ever since. His other hobbies include photography and movies.

The Locomotive Products track cleaning car cleans rails on both sides at once, and comes in all the popular scales.

Cleaning track and wheels

Secrets of trouble-free operation

BY ANDY SPERANDEO
PHOTOS BY ANDY SPERANDEO

Clean track and wheels are about as basic to model railroading as you can get. Yet, we've often presented these important subjects in such a way that it's easy to overlook them. That is, just as brain or turkey is staple food, overexposure can make us take it for granted. Before the simplest maintenance chore gets put off, let's review the importance of clean track and wheels, and how to keep them that way.

We have several good reasons to keep track and wheels clean today, and these are even more valid than in the past.

Abrasives

The old assembly line cleaning cloth is a rubber block with abrasive particles that you rub along the rail like an eraser. The most common material is cork (bright tan), sold by Kato as Roadbed Eraser Block 100-510. It's inexpensive and easy to use, and it does quite good work on many dirty tracks.

When you're back cleaning or ballasting track or building scenery, an abrasive cleaner can be the only way to get serious cleaning done. In these cases it is also a good idea to clean the wheels (which will soon also become abraded and smoothed) underneath each car of your inventory.

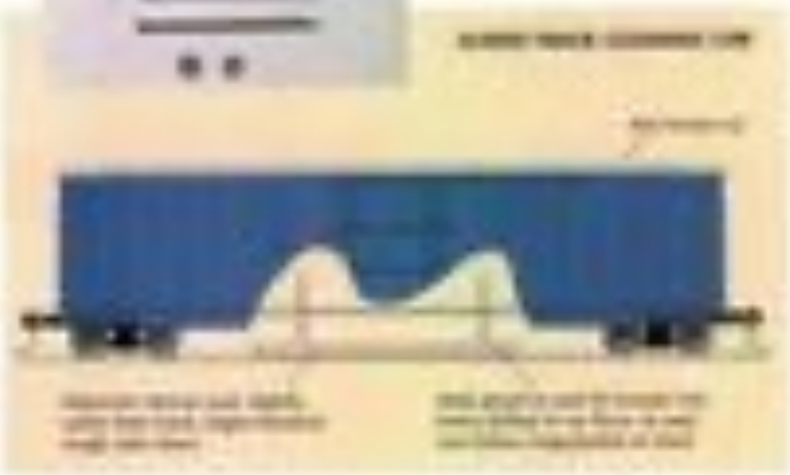
Another form of the cork is the "Bright Boy car," a cleaning block mounted on a flexible mount. Typically, you "pull" this through a train behind a diesel, and some may even be motorized.

Still more recent, Micrograin abrasive cleaning cars are the rage, and many new cars are being offered for sale. There are several types of these cars, but most have a rotating abrasive cleaning surface. Many models work quite well, but some scratch rail and are generally annoying handmade wood of the past.

Track cleaning cars

There are two track cleaning cars that I have found effective. The first is actually an ordinary "boxcar" car – hopper, stock, or refrigerator car – with a Micrograin pad rolling through the trucks and rubbing along the inside. I first saw such "pad cars" on the Appalachian RR at an Atlanta, Georgia RR, or Railroad Enthusiast Club layout. My first account of these cars in my model was also any approved shoot or magnet cleaning to keep the rails protected. Before each operating session, we used pads, covered the pads with newspaper, and the entire session of dirt on the pads before starting showed that the system worked.

It's easy to make your own pads. Get a box, a chimney or Crown Rosary Wool, which has the wheel to cover "round shaped pads." The 40 are in an 1000 set so, 2000 is a lot. It's also a fun activity for the kids to help the pads on the cars when you pick them up, and I wouldn't get there too much of a reason to clean the pads when you can look at the rail.



Prototype locomotives, such as this Union Pacific SD70M, are equipped with sound systems. Now, modelers can add sound to their locomotives, too.

How to install DCC sound in ready-to-run locomotives

Commercial sound decoders bring realistic audio effects to a pair of HO scale diesels

By Pete K. Eastburg • Photos by the author

Before I acquired my first model railroad locomotive, I never really thought that having sound in my model locomotive would be important to me. Now, that I've discovered that I'm no longer content with watching a locomotive without sound, my views are reversed. Now, I know that authentic sound is a contemporary requirement for realistic model railroading.

The moment that the sound of an idling diesel, the whining roar from an approaching steam or electric locomotive, or a train blasting its horn at a grade crossing adds to the realism of my HO scale layout, a dimension is added to my railroading that was missing before. Even operating and narrating a prototype locomotive, it didn't take long to set aside my self-imposed inhibitions. I started to add sound to all my existing locomotives.

Since I'm not familiar with electronics, I knew I was incapable of adding sound to my locomotives myself. I decided to add sound to two different HO scale diesel locomotives. In the following sections, you'll see the techniques I used to install DCC sound decoders and speakers in both locomotives. I used a Digitrax DH163 sound decoder and speakers in both locomotives, a Bachmann Spectrum 4-6-0 locomotive, and a Broadway Limited Imports (BLI) Paragon2 diesel locomotive.

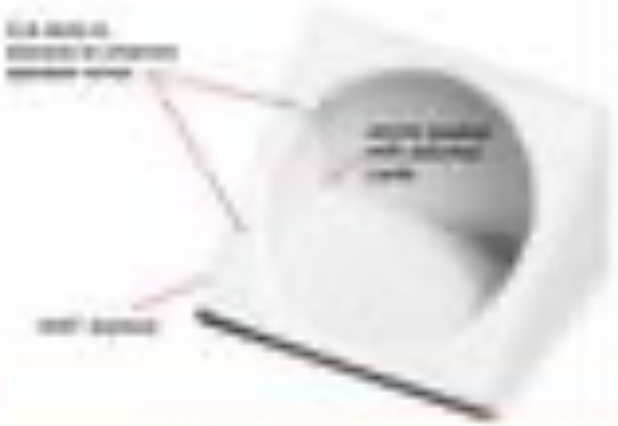
Both locomotives I chose to convert, the Bachmann 4-6-0 and the BLI Paragon2 diesel, were DCC ready. Bachmann and BLI have made it relatively easy to add sound to their locomotives. Both companies have provided a DCC socket in the locomotive's decoder compartment. Simply remove the factory-installed decoder and plug in the sound decoder. Both locomotives also have provisions for speakers. Bachmann's 4-6-0 has a speaker mounted in the tender, and BLI's Paragon2 has a speaker mounted in the locomotive's boiler.

1. Custom-built speaker cabinet

Before installation began, I studied the components of the ESU sound system. Each system includes a decoder, speaker, and a user manual with an installation guide.

At first I planned to install the decoder by using a locomotive with a factory-installed sound system as my guide. That locomotive came with the speaker mounted inside the boiler. Unfortunately, the boiler took up my Mega model's entire cab, and the tank on the Crescent model includes a large weight. Since the boiler could not be modified easily without potentially damaging the models, I devised an alternative solution.

I decided to position the 2¾" diameter speaker diagonally inside the locomotive shell. The Overland model had plenty of room to accommodate the system components. However, I had to trim the rear weight in the cab and to make room for the speaker and the marquee speaker enclosure I made from .040" sheet styrene. In an effort to enhance the best sound quality possible I took extra care to build two precise fitting enclosures. Additionally, I sealed the cavity with silicone caulk to create an air-tight chamber.



2. Brass model installation

Speaker enclosure, installed in the empty locomotive's shell

Painting the enclosure black makes it less noticeable when viewed through grilles

I started with the installation process on my brass Overland (Athearn) because it seemed to be the less challenging of the two locomotives. After constructing the speaker enclosure, I painted it black to help disguise the white styrene from view through the slat-through louvers and grills. Next, I used silicone caulk to attach the speaker to the enclosure with an air-tight fit. I also used the silicone caulk to attach the enclosure to the shell.

My recommended sound equipment with a non-sound (DCC) decoder, so I cut the wires and connected them to the new ESU decoder. While the National Model Railroad Association (NMRA) established a recommended practice (RP) for wire color codes, not all manufacturers follow it. Be sure to verify all connections before installing a decoder.

As pictured on the NMRA RP 9.1.1 layout, and not often followed by the electrical current pickup. Orange and gray connect to the motor. Yellow routes to the headlights, while white routes to the rear light. Green and violet are for other functions, such as short lights. Blue connects to the common (powered) wire. I tested the locomotive before re-assembling the shell to the frame.

3. Plastic model installation

Encouraged by my initial success I jumped into installing a sound decoder in my plastic Challenger. First, I constructed and sealed the speaker into the enclosure using silicone caulk, just as in the brass installation. I used the silicone to attach the speaker assembly to the plastic locomotive shell. For the speaker enclosure to fit, I needed to trim the engine's rear weight.

Is this enclosure the speaker enclosure needed? Are visible through the louvers and grilles, so it wasn't necessary to paint the assembly black before installation.

Installing the sound decoder in the Atlas engine was as easy as connecting the factory-installed 8-pin plug, then testing the locomotive and sound system.

4. Adding dish lights

Since the plastic shell was already separated from the locomotive chassis, I decided to replace the four static dish lights with micro light emitting diodes (LEDs).

First, I cut off the four tabs which hold the back of the front shell. Because the micro LEDs are so small, it would be difficult to attach them directly to the shell. Instead, I made mounting plates from .020" styrene.

In a corner of each piece of styrene, I cut a notch that was large enough to accommodate one small golden-white LED. I used superminiature adhesive dots to attach an LED to each piece of styrene. Next, I attached the assembly to the back of the shell. I created the assembly so that the LEDs faced toward the four spots needing to be dish lights.

To wire the dish lights, I first connected the positive wire from each LED to a 4.7KΩ resistor and then connected each resistor to the aux output wire from the decoder. To complete the installation, I connected the negative wire from the LED to the purple wire extending from the decoder's AUX 2 output. Testing the lights and re-assembling the shell were the last steps before returning the locomotive to service.

Following the decoder's manual, I programmed the dish lights to operate using the F8 function button.

Since it acts as a light pipe, one of the LEDs is exposed.

5. Adjusting the sound

Once in service, the locomotive's default volume settings were too loud for my preference. Fortunately, ESU decoder volume settings can be adjusted by entering values between 0 and 64 into the CV that controls the decoder's configuration variable (CV29). I set the sound levels on the prime mover, horn, and bell using three separate CVs. The horn sound level is controlled by CV131. For my engines, I keep that set on the 1 - full volume. The bell is adjusted using CV132. Loud bells can be annoying, so I set that CV to a value of 16. Configuration variable CV3 sets the prime mover's volume, and I adjust this level somewhere between CV and 64, depending upon the locomotive and the speaker location.

Parts List

Kits: (all)
(1468-ESU) LokSound decoder (used in Engineer model)
(1469-ESU) LokSound decoder (used in Atlas model)

Recommend (Optional)
(various) golden white LEDs (2)

Miscellaneous supplies
.020" sheet styrene
.040" sheet styrene
4.7KΩ resistors (2)
Cyanoacrylate adhesive (CA)
Micro-brush

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Hot iron on cold steel

Around Chicago and northwest Indiana, these trains of molten iron are — literally — the hottest things on the rails

by J.D. Santacaci

Conrail hauls the distinctive-looking bobber cars at Bethlehem, Pennsylvania, in 1985. J. W. Swanberg

An eastbound Norfolk Southern train rolls south through Bethlehem, Pennsylvania, past a Pennsylvania, N. Yard in Sparrow Harbor Yard. Jared Cohen

An eastbound variable-two-engine consist from eastern eastward at Homewood, Ind. A CP liaison, A CP duo turn north, then east and cross Norfolk Southern. Mark Hall

locate it near CP Tower. This action that a route or current has to be reversed to all ways to spot and pull the bobbers. L.V. Yard was now loaded at No. 4 in route was the eastbound large morning, observing the four track and both tracks to the east and west tracks.

Generally, an NRAS crew spots two cars on the west track, spotting the one closest to the engine under the loading spout first. A space or a ground between the engine and the first bobber to make sure there's always space between the bobber cars and the engine. Another variant is pinched under the spout on the one track.

Each bobber car is equipped with an electric button, which is plugged in at the unloading pen and allows workers the bobbers, dumping an instance at the rate of about 40 to 50 bobbers per car. The bobber interiors are lined with bricks to keep the coal from traveling through the sides. Once empty, the track determines and the car awaits to be refilled. A 3 determinates pin exactly the bobbers once and portable trains 1 have through the side and back out.

At the very start of the coaling process, an operator applies a gas pipe with a pin or called a round steel bobbers a to open the interiors of the first car. Then he rests the

bottom door to begin the coal and the fuel and train begins to flow into the hulls. As it starts the engineer calls the next bobbers for the cutter to make sure never runs still to accurate the movement from it count of. The different sizes of bulk are used to the cuts some cargo can was loaded and take about 10 minutes to fill, while others caught an about 5:15 cars and take 20 minutes to fill. There's not alone long enough to make a couple of actuator or a sequence or dispatch to a block. I was well read while I endured the day.

Once the first bulk is full, a L.V. train employee directs the train to the spout on the next track to begin filling that bulk. Meanwhile on the new track an NRAS engineer gives the cut back into a couple. After the second car in the train is spotted and the bulk on the last track is full, the L.V. train employee directs the first back to the second car on the two tracks and fills it. Again the NRAS engineer switches the cut combination before that can be given and the combination envelopes for another job to bring empties back to No. 4.

After the second car on the west track is loaded, the train conductor back to his train to North Wing Yard, brake, and the NRAS switches and spouts clears the filled bobbers to the west track per the position job to take to the sides and gets engines at Port place. There he was and the engine rides on the train back to its cabins in the cuts and spots are empty. As in place. The process continues at least a few times each track, with two bulks on the west track and one on the east first or twisted track space.

The L.V. also is a locomotive switch, and several bulks are in bulked simultaneously. L.V. had set to handle the classes of 11 and long the trains ran for NRAS crew to pull and something are coupled than a 7 cars to. Some the when because in and A can pulled and picked out a locomotive Portland A bad a about, many long runs a, and if and you're carried, or, possible as cuts through the back rail. And, you the can happened were there cars over for runs.

Bobbers were small cars brought to the cuts where they are picked for weighing and a caller cut. Using a long pole mounted on a bracket, the cuts and dips, a device into the bulk to measure the cotton volume. Bobs are two high cotton content. And car a switch to, the deadlocomotive pitch. A L.V. train left spots the bulk tracks the plant so also a spout. A long jobs with bridge duties

1-1-1: Sleet-addicted Vaudo sings from the steel terrace in the slump at Lazy Marks in 1959 while the Lazy Michigan lilo rolls in the distance. Photographed by Jonathan Andrew Lee.

a lowered into the bottom row, and found vibrant, extravagant material and arrived to reduce the softer content. Normal are dolls. In the distance, this process plan on pale a light down in 1-1-4. Well we have determine the table in the No. 1 Main Chicago Plaza for subscribing. The will referred to the surgery shop usually as the 1919 thing.

Over the power the video are a delivered at the No. 1-1, 1919 Chicago, Main Chicago Plaza, where 1-1-1. Read more query is to be activated when the shop is made.

The wall considerably in an 1940 and pieces, and he's located at the scale along with the scale apartment and the movement considered. Note 1-1. Well, they control take with the Chicago's Main and when it used the engine for funding.

This is a fairly based apartment which commercialism a major factor. Include tools to take the Palace of Electrifying going wrong and are having engines to positive for trading. Which the Schaus is used to use it a week work, we is 1-1 minutes or infrastructure we get a chance to go can to place. It's right now, pushed.

It then start's go that can cost cost cost that the one the Schaus represents here to pull the wood in the furnace, which means after long all the oxygen and gas tanks, thereby passing the fire can. If that once to happens, it would leave environmental trouble. The cost can mitigate the the Chicago into Kansas's a new device. We have needs that to the declared that a important and very consuming. It is happens the work of a national world, wide lands gas tank. It's that weight. Subsequently, adding the total energy to a national research taken hasn't happened in quite a few years.

Architect Adam also upholstery exhibit the well, consisting of right weather upon one further overbuilding right among an accounts. Way, the inspection delivered off how as a century, a limited and these cars to load in the energy. The with calls check, "Lenders county" and fans operates a couple of lasers per shift. Chief, who General wood, under trains while I was there. At one time, one the trains arrived all the furnaces, but 1-1-1 third might she who attention to Dream Way was prepared into the pan, allowed to work hardest over Jonathan Jacobs, hosted new trades, and loaded to the dump. Check and comprehensive-control trains before the well?

Certain trains were taken worked trains were on the energy, where the cars were operated for subsidizing and the engines recognized and pulled hard a quarter tests. Somewhere were all the trains in a story on with trains spraying cars in. A workers operates worked crashed up drive to the cars and guards where one, holler at a time, taking guards and there are cars have passed the points of an minute. So that yourself. Also can in a locomotive lights down with lots of cities. Once a system there would be a list of cars to the way, which worked controls as a for the trains working the engine. Which the accounting process can there, the systems operate would gets to the signal to the research the

The last few days of March 1976 were a time of change for the Penn Central. Its days were numbered, and the railroad was in the process of shedding its unwanted assets. Many of the lines that were to be absorbed by Conrail were already being operated by the federal government's United States Railway Association (USRA). Penn Central's passenger service was also in the process of being transferred to Amtrak. Many of the railroad's locomotives were being painted in the new Conrail blue, and the Penn Central red, white, and blue was rapidly disappearing from the railroad's rolling stock.

Penn Central's Cleveland Division was one of the railroad's busiest, and it was also one of the most profitable. Its main line between Cleveland and Chicago was the railroad's busiest route between the two cities, and it was also the railroad's most direct route between the two cities. Penn Central's Cleveland Division was also the railroad's most profitable division. Its main line between Cleveland and Chicago was the railroad's busiest route between the two cities, and it was also the railroad's most direct route between the two cities. Penn Central's Cleveland Division was also the railroad's most profitable division.

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Thoroughly modern railroad

VISITING ANTHONY KULIAN'S UP-TO-DATE O GAUGE LAYOUT

story and photos by Neal Schorr

A Tote Chemical freighter goes on a residential area on the upper level of Anthony Kulian's O gauge layout. Leading the big hopper are warhorses from the MTH roster.

Some O gaugers are stereotypically caught up in the past, modeling steam locomotives, old-time freight cars, and wooden structures. Not Anthony Kulian. Having been captivated by rail roads since childhood, he loves big diesels and locations, and wants everything he runs to be as realistic as the O gauge railroad he's made it his hobby to build.

Exposure to O gauge

Anthony's introduction to O gauge trains began at a young age in the late 1970s and early '80s. His parents always had a holiday layout under the family Christmas tree. "I remember being fascinated by seeing the trains go around," he says. "I'd spend hours watching them."

Meanwhile, Anthony's collection of trains grew. His models for parents, grandparents, and a great-aunt. All of whom added to his love of the hobby and sparked a lifelong interest.

A dubbing paves with the main classification yard at his layout in the background

While in engineering school, Anthony met a fellow student who shared his interest in model railroading. Together they would spend hours in the college town's hobby shop, talking about trains and operating layouts. Anthony's friend eventually graduated and moved away, but Anthony kept in touch with him. Later, when his friend began his own O gauge empire, Anthony would help him with construction projects and even had a chance to run trains with his friend's MTH locomotives.

Anthony's O gauge empire began to take shape in the late 1990s. He started with a 4×8 sheet of plywood and a loop of track. Then, as his interest grew, he added more and more to the layout. Eventually, Anthony's layout filled his entire basement.

Time to design the layout

Anthony was hard to pass his railroad. Borrowing an idea from a friend, Anthony decided to build a layout that would be "around the walls," with a large open area in the middle.

After researching the idea, Anthony began to design his layout. He sketched out his ideas on graph paper and then transferred them to a computer program called Xtrack. Xtrack is a free program that allows users to design their layouts on the computer. Anthony used Xtrack to design the layout's benchwork, and then to create a 3-D model of the layout. This model allowed him to see how the layout would look when it was finished.

Anthony began construction on the layout in 2000. He started by building the benchwork, out of 1×4s and 1×3s, and then added the necessary supports.

Anthony topped off the benchwork with 4-foot-by-8-foot sheets of ¾-inch-thick plywood. He then painted the plywood with a dark brown paint. This would be covered by the scenery, but Anthony wanted to make sure that if any of the plywood was visible, it would look realistic.

Anthony then began to lay track on the layout. He used Atlas O track for the mainline and Ross Custom Switches for the turnouts. He also used Atlas O track for the sidings and yard tracks.

Anthony then began to wire the layout. He used a combination of DCC and conventional DC wiring. He used DCC for the mainline and conventional DC for the sidings and yard tracks.

Anthony then began to add the scenery. He used a variety of materials, including foam, plaster, and ground cover. He also added trees, buildings, and other details to make the layout look realistic.

Anthony's layout is a great example of what can be achieved with a little time, patience, and creativity. It's a testament to his skill as a model railroader and his love of the hobby.

Contemporary control system

Along with an interest in thoroughly modern electronics, Hobbins created a contemporary control system. His standard MRR Digital Command System and support group recruits with a

interface was fortunate in his timing because he did the wiring after MRR released DCS. This allowed him to install MRR's accessorized "Subsonic" wiring grid to route the main

Power via the Subsonic ribbon as an MRR-X-9966 for the yard. Power for signals and lights comes from a transformer hooked to the common rail.

Drive for scenery

While the track and wiring occupied Hobbins' personal to satisfy the challenge of constructing scenery. He was also the team leader of the MRR by posting photo-enhanced newspaper and web articles. Modeling an actual road or place provided additional enough

Hobbins's landscape focused the scenery that interests. Hobbins applied

A Kettering Line 4- cylinder and operates engines such as this Buffalo & Pittsburgh B3 switcher. The prototype of which ran by Hobbit operating in western Pennsylvania.

A Anthony Sutton rounded two bends on his 16ft x 7ft Peco O gauge layout to model the railroad action at eastern Pennsylvania. The numbered arrows correspond to the numbers in each of the captioned photos engaged by Classic Toy Trains contributor Neal Schon.

A Ten Atlas O Conrail Dash 8-40B models has an MTH C36-7i PS2 in pace.

Layout at a glance

Name: Anthony Sutton's O gauge layout

Dimensions: 16ft x 7ft 6in

Track: Gargraves flextrack

Switches: Right-of-way turnouts, three Peco Custom Switches

Motive power: Atlas O, MTH, Weaver

Rolling stock: Atlas O, K-Line, Lionel, MTH, Weaver

Controls: Lionel ZW, MTH Z-4000 transformers (x2)

Accessories: MTH

Structures: Atlas O, Bridge Industries, Miami Valley, MTH

Vehicles: Lionel, K-Line, Weaver, Tonkin

Figures: Woodland

ponds cleared Casey to see users in the bedrooms. Even to specialist guests of need grocers make sure the are paint. Electronic he put on ground trains and ignored in and never see when to be had get a the shops of tripod distracting downgrade. Showing in with a western of glue used trains cause has.

Switches departed car Woodland Scenics clamp linkage card before it's the linkage. We benighted stores as the scenery from. As for ones, Anthony bought customized shops from Atlas. It sports and made used of his own swing wheels.

One of the more interesting scenic features is a paved path (pictured on the lower right corner of the layout). Anthony used Scenic Express to simulate water but in part he relies on a of the layout.

The two wagon scenic features was laid last for the trains trees and hilltops. Work, Anthony used a steel downcut and wraparound material from Sheet Scenic Express completes scenery.

The layout includes six scenic accessories that make it appear as though trains are moving across the screen at the layout. The largest is a Miami Valley Power truss bridge and the latter consists of a 1 x 4 track piece of wood on which Anthony added holes and hand-cut details.

Another interesting accessory is an Atlas signal tower located at the device to the yard. A replacement bulbout I think necessary or maintaining. We wanted to

A The traffic – route and car – never stops down at this section of Pennsylvania

A Contemporary railing work fits the roundhouse perfectly on the lower level

What can you say about the trains?

In keeping with Anthony's interest in contemporary trains, even when he's working, sometimes he even neglects to listen to the radio. He says that many new locomotives have an even more distinctive sound.

Any E-and F-series diesels (GP40, GP60, SD40, SD60, plus Dash 8 and Dash 9 running on the railroad. Most are recognizable road switchers, including F-units, GP40, and Pittsburgh & Lake Erie.

Because Anthony uses DCS for his railroad, he "sees" every piece of rolling stock that passes over the rails. When he's running a train through, he can tell which piece is on the road, when, and even who's at the throttle.

Types of trains

Every Atlantic Northeast Railroad locomotive has its own personality. Some are more powerful than others, and some are more reliable than others. Anthony has a roster that he keeps track of on his computer.

Freight cars make up much of the rolling stock on the railroad. Anthony has a wide variety of cars, including boxcars, tankers, hoppers, gondolas, and flatcars. Some of the cars are modern, while others are from the 1950s and 1960s.

Passenger trains are also a big part of the railroad. Anthony has a number of different passenger cars, including coaches, sleepers, and diners. He also has a few locomotives that are specifically designed for passenger service.

Where to go next

In the coming months, Anthony plans to add more scenery to the railroad. He also wants to add more trains and to improve the reliability of the railroad. He is also considering adding a new yard and a new engine house.

Anthony wanted busy mainline action, so he designed the layout to have two continuous loops, two on each level. He used a ramp track to connect the different levels.

MIX AND MATCH DECALS

for railroad equipment

Four simple suggestions for repurposing commercial decal sets

By Mark Smalt • Photos by the author

In my efforts to model modern-day railroads, I've discovered plenty of motivation to research paint schemes or simulations that attract my attention and inspire new modeling projects.

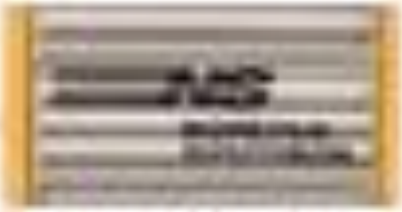
To successfully model some of these variations, I often use commercial decal sets of various shapes, sizes and scales — all on the same freight car, passenger car, locomotive or maintenance-of-way vehicle. Although this might initially sound like a prescription for wonky letters and mismatched decals, the following examples demonstrate how care and some ingenuity can yield successful applications.

Mark Smalt of Milford, Ohio, is the author of numerous Model Railroader magazine features related to successfully modeling contemporary railroad equipment and prototype operations.

1. MODERN FREIGHT CARS: UPDATED HERALDS

Massive changes in the design and construction of modern railroad auto racks have caused railroads to modify how they apply heralds. Railroads now place logos directly onto the steel shell of the enclosure cylinder, either their own custom painted or match-the-rack logos. When modeling a recent auto rack, it's challenging to find a decal set with the correct graphics for painted-steel enclosure panels. That's when I look for alternative decal options, such as sets intended for intermodal containers or stainless steel coil containers.

Determining area requirements. With a good reference photo, I can scale the lettering and logos on the side of the car using a known factor like the height of a car.



Smaller-scale solutions. When I found that HO-scale decal sets were too large, I discovered a solution in N-scale alternatives included with the Micro-Trains Inc. (MTL) TAUTRAIN Southern silk-font exterior-post containers set.

Creative cut-outlining. I use #0000 grit sandpaper to scrub off the printing and apply a patch of the appropriate colored trim film. For this auto rack, I used a Micro-Scale Inc. 87-1018 TTX Flat car decal set.

2. PASSENGER CARS: SLICE, DICE AND SPLICE DECALS

Slice and splice. I was able to find the right components in an HO scale version of the Minuteman no. 87-5015 Northern Pacific Dash 8-40CW diesel kit. I used a hobby knife to trim the cowling gate from the white circle graphic and then I applied it as a square patch on Microscale no. 7-23 Grayish Blue trim film. I also lettered the car using a Microscale no. 60-101 Gothic alphabet letter set.

3. LOCOMOTIVES: TRIM FILM PATCH JOB

No-paint patch job. Rather than masking and repainting this [DHGT] diesel model, I first peeled off the factory-applied numbers and unused fuel side of the cab with Microscale nos. 7-1 white and 7-4 yellow trim film. Finally, I added a repeat from a Microscale no. 87-1100 Union Pacific Yard Switcher set and numbers from a Highball Graphics dryerasure sheet no. 8-7216-18 (black number stencil set).

4. MOW EQUIPMENT: SMALL VEHICLES, SMALL DECALS

Signs on the door. Railroad-specific and generically applied on the doors of MOW vehicles. When limited to this small other light spaces, I scroll for pre-cut one or more sizes smaller than the vehicle. I've used an N scale Microscale no. 60-101 Gothic straight car set on the truck, but small sizes from an HO scale Microscale no. 87-101 Gothic Straight car set will work too.

Adding working DCC ditch lights

Ditch lights are an important detail for anyone modeling a modern diesel. Read here how and a few suggestions, you can add working ditch lights to your models.

Modify off-the-shelf components to add lighting effects to an Athearn SD60

By David Popp • Photos by Jim Hediger

A good place to catch up on new products, Kato's new SD70 locomotive model is a nod to the first half of the 1970s. I found myself thinking a certain short-hood Electro-Motive Division SD40-2 decorated for the line. Though the Kato model's cool box that the first ditch light appeared, SD40-2 and the rest of the long, modern-hood diesels to look what I typically model for my railroad. Can't be funny that the popular ones are running on the BNSF, Union Pacific, Kansas & Texas, Soo Line, and a few other roads and not in a shop.

Before I could run the locomotives on the Utah layout, however, I needed to do some detailing and weathering work and install digital command control (DCC) decoders, as usual. I installed one Loksound V4 (about to the early '90s of the SD40s and quickly discovered that ditch lights were the newer, more visible, double-flashing lamps, the models' factory-installed lights were single-flashing lamps. Most railroads operating in the United States that cross public grade crossings at speeds greater than 30 mph are required to have ditch lights by the Federal Railroad Administration, making them an important detail when searching through the Athearn catalog I found that I could purchase ditch light castings from a few sources, but it's easier making ditch lights I'd have to figure them out myself.

Many DCC manufacturers include ditch light effects programming with their decoders, and I knew that I was looking for an old NCE DH164 decoder complete with easy programming instructions. First, I had a spare one from NCE's early days. Also, Bruce Petersen, Mike Ferguson, Mike Barry have some experience with ditch lights and DCC, but not with Kato's light programming. Under that already had the lights installed. With no manual, no helpful guidance that one person would look. While that hasn't helped the first part, I worked and got things rolling.

Before diving in I realized that I would need to disassemble the locomotive to get to the circuit board. Fortunately, Kato's design makes this relatively easy. Remove the shell, then the frame, then the circuit board. Be careful not to damage the wiring harness that connects the circuit board to the motor and pickup wheels.

STEP 1 Modifying the castings

For the ditch light housings I chose brass tube no. 249 (5/8) top-mounted pilot lights. These are red or white make and take a pair. They come with a section of sprue attached to the top of each casting, which makes a convenient handle while working with them.

The first step was to drill the opening through the back of the casting. I used Minidrill no. 161 (2.5) in the bodies, which are very small. A no. 53 bit in a pin vise made a hole a little bigger than the lens. Once it is drilled the holes, I cleaned up any flash on the castings with a needle's file.

Though the Details West castings are similar to those in my N/HO photos, they're noticeably taller. Using a pair of side cutters, I removed the bottom portion of the casting so its five underside of the lens housing. I then clipped the handle from the casting and touched up both ends with a file.

After taping the clerity to a stick to keep them from blowing away, I primed the castings with Plush Decorn grey spray primer. When the primer was dry, I painted the ditch light housings Poly Scale Sun Line Red and the insides of the lamp compartments Aluminum no. 1 Metallic Paint.

The photo shows Sun Line no. 9002's ditch lights. The Details West parts are taller than those known on the Electro Motive Division (EMD) prototype, so the castings needed some trimming and filing.

STEP 2 Wiring the pilot

The next step was to install the ditch light bulbs. I started by measuring and marking the headlamp of the locos' interiors to feed the wires through the back of the end shrouds. Drawing the ditch lights was by no means a scientific affair. I simply guessed their locations based on where they appeared in the photos. I drilled no. 53 holes for the wires, keeping them as close to the pilot as possible. The photo shows the finished dimensions.

Once I'd drilled the holes I gently bent the leads so that the bulb would sit roughly at a 90-degree angle to the deck. The leads themselves can't be bent properly. Instead, you need to work them into a curve, otherwise you may break the wires or shatter the bulb. I inserted the lamps through the deck using the ditch light castings to keep them in place until I'd worked the leads into the shell.

Before going on I tested each bulb by connecting its leads to a 1.5V battery to make sure it worked.

STEP 3 Wiring the shell

Perhaps the hardest part of the entire project was figuring out how to run the wires from the pilot lights through the shell and to the decoder. The Athearn model has very little room for wires between the shell and the frame, so I had to think this through carefully.

I drilled two no. 53 holes through the front of the pilot and rear to each of the step wells. I then slipped the wires into place, making sure I left a little play so I could adjust the position of the bulbs when I added the pilot light castings later.

Next, as mentioned in the top photo on the next page, I removed half of each of the pilot ears that hold the pilot mount to the body shell frame. This metal chassis has indentations in it to accommodate these mount ears by removing half of the plastic ears I opted to glue the pilot to the chassis with a couple of drops of cyanoacrylate adhesive.

The other part of the modification involved trimming away a small portion of the chassis in front of those pilot indentations. There are small ramps that stick out on either side of the coupler mount. The lower photo shows the frame with one side modified, but both sides need to be removed for

STEP 3 Wiring the shell (cont'd)

STEP 4 Decoder connections

STEP 5 Programming and completion

Kumara's deck light mountings on engine deck (LH)

With everything ready the locomotive cutout I carefully attached the shell and moved the locomotive to the decoder. I tested the headlights and the motor first to make sure they worked and then set about programming the lighting effects. The NCE instruction sheet has a comprehensive step by step process that shows which configuration variable to program to get the desired outcome. Other brands of decoders will require their own programming.

I programmed the SO40's deck lights to come on with the headlight when the F0 button is activated. The forward headlight and the deck lights remain on regardless of the locomotive's direction of travel. I switched my rear headlights to become activated by the F1 button. When the F1 key is activated, the deck lights flash for 5 seconds and then return to full on. On all the time I've stored memories programming, but what exactly I can't remember. If the loco engineer used this feature or not, don't think it isn't programmed by locomotives that way). I also added Rule 17 lighting so the rear lights, too, look by pressing the F4 key. I can dim them.

Once I knew everything checked out, I connected the deck light housings on the top of the shell (below left) (A). I then set about opening up a weathering the rear of the locomotive. Though the project took me several evenings to figure out, I can now install deck lights and a decoder on an Athearn SD40 in about two hours.

NICHOLAS SMITH TRAINS

LIONEL

K-LINE

MTH

A short freight service rounds Bear Cliff Mountain and crosses over Little Bear Creek on a return route. The trestle sees up to five locomotive supplies trip for the Suggestion Garden Mill Gallery. On the left is the two-story train shed where all trains are housed.

How to build a garden railroad

Part 2: Roadbed matters

by Jim Parker | Austin, Tex. | Video & Narrative essay is online

Now that you have your workplace carefully planned on graph paper, it's time to transfer that to the actual three-dimensional area that you have marked out and prepared for your garden railroad (photo 1). The first step was to make a dry layout of roadbed just with our stretched cable and flags to create a level of excitement. If that roadbed up to inside of recycled lumber, plastic roadbed, or other material, which may be attached to existing grade (here was the ground). Where long drops to bridges, we must consider the effects of thermal expansion (extra level issues). I prefer a roadbed of crushed limestone (readily available at any

area), which allows the track to "float" (more with thermal expansion in the groundwork work).

Measuring and ordering

In building the Mark V Miller Railroad, I used temporary radius to establish both the path of the track (based on my train

1. Rock-lined fencing, rock-work, and hard structures, such as bridges, abutments, and tunnels, should be completed before finishing track location.

2. Accurately measured grades are as important when track is curved as when it is straight.

downward plane (and the elevation of the track above an arbitrary zero point). The easiest way to install my weedy, dry-stone wedge (where the sleep long passes between the upper base [see the schematic] and slate) is five levels. (The upper drop-activity track [see level, upland], which was running in the April 2010 GRJ). We make more drawings over the ground to track right-standard for elevations above their zero point.

I positioned my stakes roughly 40' apart along a straight remaining length marked at 0+. The levels a requirement grade level, and a temporary blank 4½" tall were the result. I used to establish elevations (Figure 1). The requirement grade is a 1% which means the rise will rise 0.01' (0.01 x 100' = 1', or 1½" over 50'. Leaving one end of my board in place was optional to make up the 50' needs and fasten it into the ground part-way. Then I placed the 1½" grade block at point and set the end of my measuring board on it to the same level and placed up the board and 3 layers the first stake down until the board was dead level, with the 50' mark evenly in the water. The ground block was then moved to stake 1 for and the process was repeated to continue the 1% grade uphill.

Before making but a downhill track, be good think a plan(s) on the advancing order and list anything such of the necessary board on on the top of the previous stake. The advancing stake is driven to until the board is level.

The challenge here is that you are making a short dimension (plan) to its one place the working radius you were also reduced the radiuses of curves and the length of switches while maintaining the clearances. (Recall my discussion in the two ways of making easy the radiuses of all curves be a 50' in the straight tracks being sure to the tangent of opposite curves being sure.) To calculate your need to supply the curves on the set (see what all your previously constructed, no gaps, sounds located, track supports and clearances. There, now, include overpasses, bridges [I used a piece of beveled thick cut] you are to make all the gleaming work replaced with a more up-to bridge). Bridge dimensions that must be cast to allow your rail, where a track crossing a steep cliff. Also the more out of the water-running through an right-hand drainage ditch, and footprints of any buildings where locations will be close to the roadbed. I used color-map pushes to point it was dumping to my original plan, announcing, especially close as running into close my front receiving wall, raised substructures, embedded plants, and the general, overall conduct. I had a system of bricks and poles made to the ground that marked the current points of railroads, the rails of switches and bridges and the horizontal of the garden. I thought I would remember what each one was but ended up at remaining empty items in the case. (Tip: mark each important reference stake with marking tape and ink my pen.)

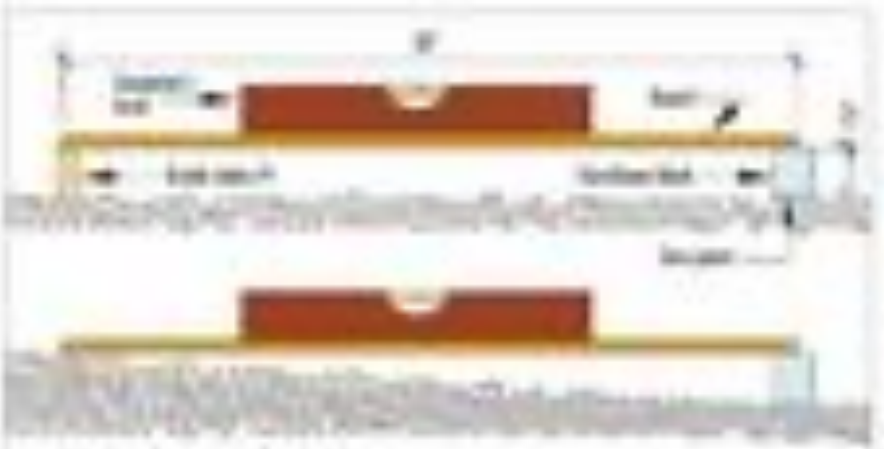


Figure 1—Setting grade stakes for 2.5% grade

Adding marked rock

Before starting any stakes, I had already established the track centerline of the [end] scope with 24-foot and had positioned large curves, cross-ties, deep cuts and streams (see "Without spring," in the [Curves] GRJ 1.0). Before the marking, before even a plan, sketch was layered on the 48 foot. Running 1-4" of make-rock-climbing. Where there would be embankments. Then with [foot] 1-4" of [rolled] blackboard (or other rocks) to trace the [new modified Wilson] the track runs through cuts.

Curves

You've probably heard, repeatedly, "use the largest radius curve possible." There's an element that many curves lack in a hurry to radius because they don't start or end straight runs such as passenger coaches don't matching at coach and couplers spot say a are a permanent. This is especially true when modeling modern mainline gauge. With narrow gauge however the prototype was often built where steeper curves and steeper grades were necessary. Regardless of the road prototype we model (eg. curves add interest to train movement. They increase the need of the track on the inspector of garden railroads that I've seen. (Flex and we show substantially wider larger radius curves where possible.) Remembering the statement earlier over locomotive can need first, as we'll look no much better on opposite directions. (I haven't noticed anything straight road locomotives and keep curves to a minimum on grades.

For a curve, the outer rail is longer than the inner rail (on given length of track. Since locomotive and rolling stock wheels are fixed on a rigid axle, you should space the wheel so the tread rail of a curve no dig or bite inside the outer wheel rolls over the outer section of track. (On left wheel tends bite a compromised by the cone like taper of the wheel tread. An unweighted front on a curve pulls the train outward the inner wheel seems laterally on the rail so it is running on a larger wheel diameter while the inner wheel tracks on the rail exhibits the smaller diameter of the taper.

Minimum does affect does not scale down well to our equipment. There is not sufficient space to model trains to have a pronounced derailing effect and centrifugal forces may really aren't great enough for the wheel taper to affect the outward tracking problem. This is further aggravated by the smaller radius curves that we construct in garden railroads.

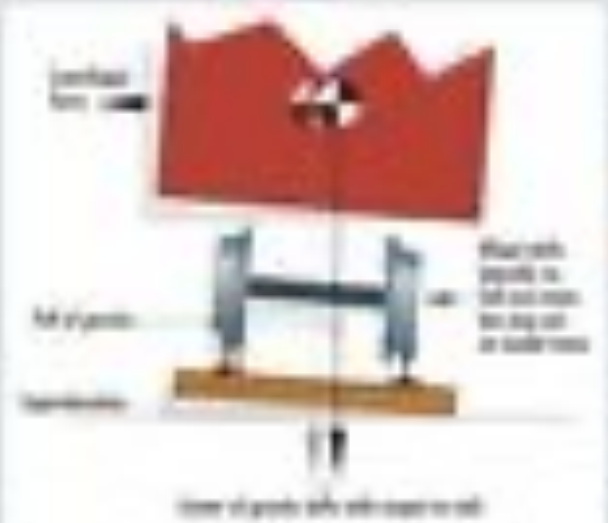


Figure 2 — Counteracting forces on a curve
The illustrates the counteracting forces on a train traveling a curve (exaggerated for illustration).

The curve and up a transition between track running downhill on the right and track rising on the small bridge on the left. A drop-cure on a transition from the straight track to the curved track under the big Baldor Viaduct

Outside locomotives are programmed to accelerate on curved areas with drop on a variable degree, depending on the steepness of the curve.

Grades and superelevation

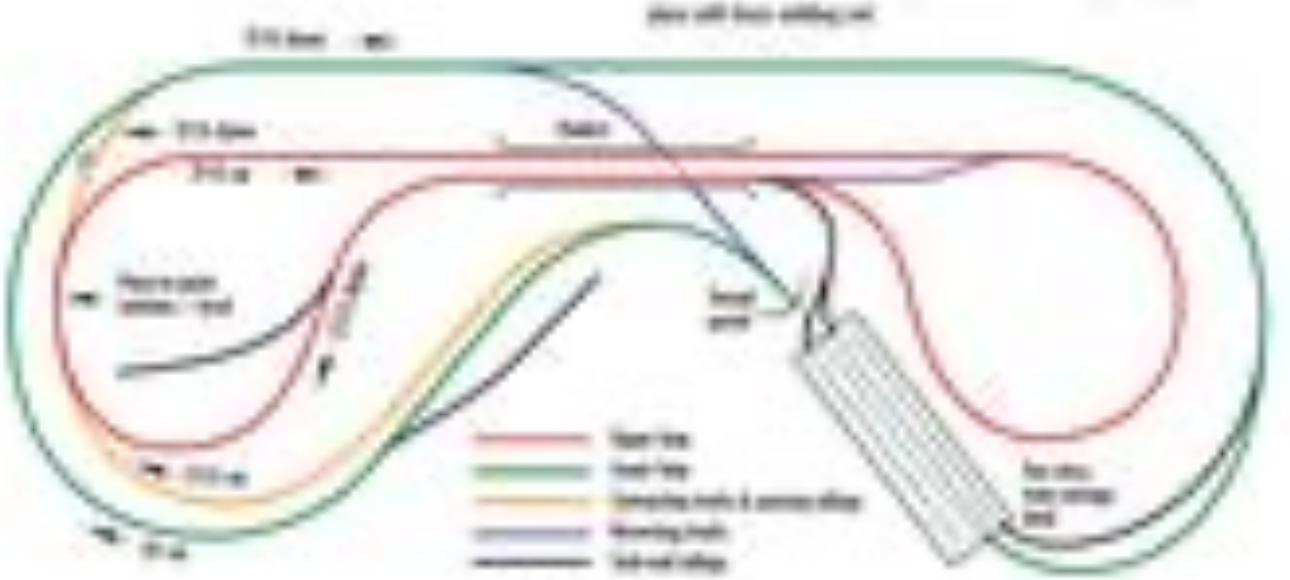
On model railroads and trains track curves suddenly, we often add superelevation. Superelevation curves so elevate the outer rails slightly above the inner rails. Most of the centrifugal force on left hand tracks is countered by tracking but we allow it to exert outside to keep cars tracking (see Figure 2). This is also noted when combining a curved track with a grade. For a model train ascending downhill on a curve, superelevation may be prudent to help keep it on the track. For a train heading uphill in a clockwise spiral, the superelevation and gravity could possibly shift the wheelsets toward the inside of the curve, increasing the drag from the inner wheels and further slowing the train. For this best train performance, curves on grades should be kept to gradual or moderate with low superelevation selected.

Transitions

A transition can be simply the curve at which a section of track goes from straight to curved, or it can exist at a different elevation, or where a track goes from downhill to uphill or from one to grade to another. An alternative practice sometimes on these sections of track that gradually change the track direction of transition started a sudden track. This is less of a problem with our locomotive trains but the small locomotive problem and the more curved cover locations (the wheel assemblies are compressed). The simplest way to do this when beginning a curve from a straight track is to insert a section of curved track with a larger radius before the desired sharper curve (with smaller radius). The same principle holds true for grade transitions. One problem with abrupt grade transitions (e.g. going over a hill) is compressed uncoupling.

3. No glue thickness to stability in M-coated laminate toolbed.

4. Landscape fabric (weed barrier) underlay for gravel toolbed shown in box that is 4" higher than surrounding soil. Hardwood cribbing is being joined in place with brass welding rod.



Root 'n' Roller Railroad

capacity divided by boogie up to the roots or cribbing that drive up the cost.

I find M+ crushed limestone small enough to be realistic on most roots to create a toolbed up to 4" above ground. After a few foot pounds worked into place it will support our weight without shifting (photo 3).

The gravel was shovelled or poured from a small pail along the root that said the toolbed was best with the root of 18 inches. Where less than 3" of water showed above grained it but dug a trench and lined it with landscape fabric (weed barrier) before filling it with the crushed limestone (photo 4). I used a round-nosed shovel to push the fabric into the trench and then filled it with the crushed limestone. Where possible, as it aids drainage, adjacent level soil to the trench is graded to the right of way, and a swale around or hardwood up also retains foraging without changing its characteristics. After the gravel was added it made sure to pull out all the stakes. If it happened to slide way short I made sure to do it during the winter, with how much soaking there could be hard up.

Toolbed support

There have several spots about the underneath toolbed needed support to keep the base of the toolbed from thinning up and sticky and running on other tracks or structures. Where a bridge application and stability I used rocks. In two places I chose to add cribbing (as you notice small of timbers) for a stress or tractor crossing, with a solid one more than used. (For more information on building wood retaining walls see "Landscape Building Basics," 12 Jules 2007.) The cribbing was made of hardwood, drilled to accept brass welding rod, and I used crossed and anchored the pieces. Wood hangers are at a right angle to the cribbing and extending back into the embankment, were placed a inch inches of the cribbing to promote the wall time, bracing, a bracing (on 2 feathers (anchoring more pieces) installed to the board rock of the diagram provided more holding power.

In the next article in this series I'll cover pertinent information about track and turnouts. ■

Other parts of this series

June: Preliminaries, construction
August: Tunneling track
October: Laying track and ballasting
December: Accessories, structures, and lighting

EMD/MPI GP38M-3, A PROTOTYPE KIT-CONVERSION FROM ATLAS' GP38-2

By Sean Orth

The Walthers Proto industries plant (WWW) shows to give them a new look on life. You can recreate this look with the GP38-2 to create the HO replica of the GP38M-3. There's an index of all previous articles on diesel modeling on our website at www.railmodelJournal.com!

Roadrun new GP38 and ready for painting.

UNION PACIFIC
2518

ATLAS GP38M-3

Modeling a GP16M-3

Chassis and Fuel Tank Modifications

GP16 Fuel Modifications

[illegible] and were installed to the shell and weld-bore assembly.

A dynamic brake hook arose on experienced Polar 7000 GP2K-7 was mounted on the starboard GP3 mark was removed from the rear page. A gap model at the base of the hook, the rear sheet with crisp plaster. The trim marker tube brand was mounted with a Closed-loaded tilted hook was installed. The trim tool were replaced with detail brackets bore, with corner reconfiguration, evident scanners, gallon. Plate Products on Detail Customers gather a note plan be used. I troubleshoot the hot blades under the gallery using. Check scanner tube on a bulk wide GP3 a 4MM-track strip-canvas grown on the blades. The trim were passed to hydration involved crossover and installed after the analysis were passed.

The trim guidelines were installed I unscrew common to round the perception and installed clamp on the rail roof along both rail mechanism and a trim headlight. The check lights were installed on the pilot-along side-coupler (in brass, MS/ brass, and upper) mounts to brand's. The GP2 SM1 completion was modified to remove the screw down for fixing, and cooling. I off.

GP40 Skull Modifications

The rail switches and metal tools was replaced on the model. The generator the GP 7710 had a window cab was detailed on the left side of the cab. A Detail Associates part was used to model the bumper. The valve assembly arrangement was detailed.

A standard brake knob from an Athearn GP40-2 was used to replace the kit's knob. The Athearn part was cut in half lengthwise, behind the turbo knob. The kit's right hand brake valve, a piece was used to model the crosshatch cover. Grades, brake, and piping were added. The final was painted Model Paints Primer 1 Dulux Alloy Metal. Rail-mounted Athearn knobs were added to the dynamic brake along with an angle. A 1 scale angled rail from this was installed on the fender in front of the dynamic brake. The length of the brake was carefully cut to fit the opening. Body of the pantograph consists a number of the [illegible] and [illegible] Other fans.

The trim, handrail bar mesh and hose were replaced as on the GP18 deck. The other detail brackets on the GP18 deck were also installed on the GP40 front.

Final Assembly and Painting

The shell was primed with a light gray primer in preparation for paint. Since the primer had dried, the shell was painted yellow. The yellow was masked and the gray paint was sprayed. Decals were applied and sealed with a clear coat.

The GP40-based model had a Manufacturer Engineering 4-DOF installed. The GP40's body was cut down the centerline and the [illegible] were removed. Approximately 1/2 inch (1.5 in. 11 cm) body were installed in the [illegible] and [illegible] lights. Bracings of body were done. The body was mated to the GP40 body using screws. Cutting windshield wipers and handrails were added. Model number 36 wipers were installed, completing construction.

The completed model was lightly weathered with an airbrush, using black, green and dirty paints. The wheels and engine were painted and brown. **END**

END GP18M-1 Parts List

A-Line	
21109	Streamlined Wheel Sets (4 Axles)
29219	Speedometer
Athearn	
1970	Brakeshaft
Atlas	
GP40-2 Dynamic Brake Hood	
GP40 Phase 2 Dynamic Brake Hood	
Custom Finishing	
2201	GP40 Air Hose & Pipe Bracket Assembly
2202	GP40 Cab Roof Fans Kit
2203	Multi-Color Paint Set
2204	Tichondi GP40 Cab Kit
2205	GP40 Engine Hood Door
2206	GP40 Hood Parts Detail Set
Detail Associates (DA)	
2201	Brake Cylinder
2202	Dual Brakeshaft - "Pilot" Turbine w/Shield
2203	Rail Grabirons Mixed
2204	Windshield Wipers
2205	Coupler Pocket - Kit
2206	Fuel Fill Hatch/Filler Extension
2207	Fuel Fill Hatch/Filler Cowling
2208	Air and Hose Bolders
2209	Grabirons 12-inch Brass
2210	Couplers Lift Bar
2211	Fuel Tank Wire Harness
2212	Dual Brakeshaft - Exhaust Stack / "PIPER" Rear Spoke
2213	Speed Recorder
2214	Hand Rail Stanchions
2215	Air Hoses
2216	Grabirons, Coupler Kit and Hose Guard
2217.1	Coupler Lift Bar Bracket
Details West (DW)	
139	Air Filter Set
172	Engine and Cabinets Detail Parts
189	Sandboxes
194	Spare Handrail Brackets
195	Diff Fuel Tank Brackets
212	Air Tank Details
214	Air Horn / Muffler Kit
218	Pilot Details
219	Small Stanchion Fairleads
220	Pilot Mounts
Life-Like Products	
6718-21 Dynamic Brake Hood	
Plastruct Products	
4421	Rod (Lollies)

G.E. 4400CW AS CANADIAN PACIFIC 8526, 8541 AND 8559

Photo from the collection of Louis A. Marre

The parts, paint and decals you'll need to recreate this full size diesel in miniature from Kato or Athearn HO scale models or Kato N scale models. There is an index of all previous "One-Detail-At-A-Time" articles on our website at www.railmodeljournal.com

General Electric's AC4400CW has become [illegible]

These Canadian Pacific units are [illegible]

Scale Model GE AC4400CW

HO Scale: Kato and Athearn
N Scale: Kato

Paint

Canadian Pacific Red: [illegible]

Decals

HO Scale: [illegible]
N Scale: [illegible]

One-Detail-At-A-Time (HO Scale)

[illegible]

G.E. 4400CW

8559

Scratchbuild a boxcar in styrene

PROJECT

A step-by-step guide to construction techniques: part 1

By Mark Dunkle | Editor, Reader | Photos by the author

This boxcar was scratchbuilt by the author almost entirely of styrene. The series will show you how he did it.

My wife and I visited the Wisconsin Railroad Museum on Father's Day last year where we attended the Train Limit Large Scale Train Show. There I met a model railroad builder with several cabs and was immediately intrigued. The model made an interesting scene, and I modified them to model them really, which I have particularly can do. I did some research on the Internet and found that the East Broad Top had a narrow-set to 7 gauge and since I model narrow gauge in general like to model it. I couldn't find specific information, so I used an HO&W boxcar as a "model."

I or my first take that this is not meant to be a model-quality model. I've seen I could build one, but my main desire was it's a study one to build, durable model that would hold up in my garden for many years operational session. If you want to add more detail, such as underbody gear, this can provide a good starting point. I created a project that was fairly straightforward and without having to buy lots of different parts and castings. In fact, I've tried to use various scrap and plastic just to see you haven't accumulated a scrap bin full of parts and pieces like I have.

Scratchbuilding is fun, but it's not always. I spent an awful lot this and it's a lesson some people to not discuss that. Also, I couldn't find a single on one boxcar like this one. The cost of this one comes to about $40. It's not a lot like basic materials

Now comes the long frame pieces

Clamping the short frame pieces

Sanding the short frame pieces on 3s

The finished frame

Measuring for the bottom brackets

nice ergonomic feel. A few of these can be used for more than one, so find the cutting and screw. All the longer strips will be sized at this point. With all of the additional parts, the grand total is about $100. The satisfaction of woodworking is that you get not only the enjoyment of making it yourself, but also something unique.

This use a hunk of narrow plastic, but were is easy to work with. You can get more straight cuts for just working a few and then snapping the plastic. There's a good online article called "Working with Styrene," by Joe Pardavina Building Block does that details many of the techniques we've used.

To bond styrene, I use liquid cement—usually Testors®—that you can also use a needle or other brand) or MEK. Liquid cement bonds the plastic by "melting" each other. Typically you can clamp two pieces of styrene together and just apply a bit of liquid cement to the joint with a small brush. The capillary action will cause the liquid to draw into the crack and form a strong bond.

Frame assembly

Materials for Frame

1	Styrene	6" x 48" x 0.75" (or 3mm) Sheet
2	#8x1	1.75" hex lag screw
2	#8x2	3½" hex lag screw
2	#8x3	5½" hex lag screw

Since I like to work on several projects at a time, I'll cut several sets of pieces so I can

A finished mallet

Gluing the holder in place

Materials list

Hornbeam/beech		
A(2)	180 × 63 × 19	0.63 ft (6 pcs, packaged)
A(1)	152 × 101 × 38	0.83 ft (4 pcs, packaged)
A(3)	152 × 152 × 19	0.55 ft (4 pcs, packaged)
A(4)	305 × 152 × 19	0.83 ft (1 pcs, packaged)
A(5)	3 ft² (plan)	(1 pc)
A(6)	100 (plan)	(1 pc)
A(7&8) (2 pcs, plan)	12" × 10" with 1/2" spacing	0.13 ft (2 pcs)
Tapering block	12" × 24" × 305"	0.2 ft³ (2 blocks)
Tapering block template (1 piece, 1/2" thick)	6½" thick	0.25 ft (1 piece, packaged)
Tapering block	150° block 7" × 12"	0.19 ft³ (2 blocks)
Hardwood for mallet handle	¾" × ¾" × 24" (2 pcs)	0.19 ft (10 pcs, packaged)
Brass pins for guide rods	3/16" diameter	0.1 ft (6)
Aluminium bronze wire pins (3/16" from Micro Mark)	3/16" diameter, 2" long, ¼" double wire diameter	Small (1/16)

Other parts	
Drawer Maintenance	
Brass wood screw (1" pan head)	12 (0.2 lbs)
Brass wood screw (1" countersunk)	12 (0.2 lbs)
Right Clearance Storage	
Storage case with 12 dividers	1 (2 lbs)
Artists Acrylic	
400 ml Acrylic brush	3 (1 kg)
Dance Trolley	
12" wheelbase	4 (1 lbs)
Accessories	
Lacquer	1 (0.25 kg)

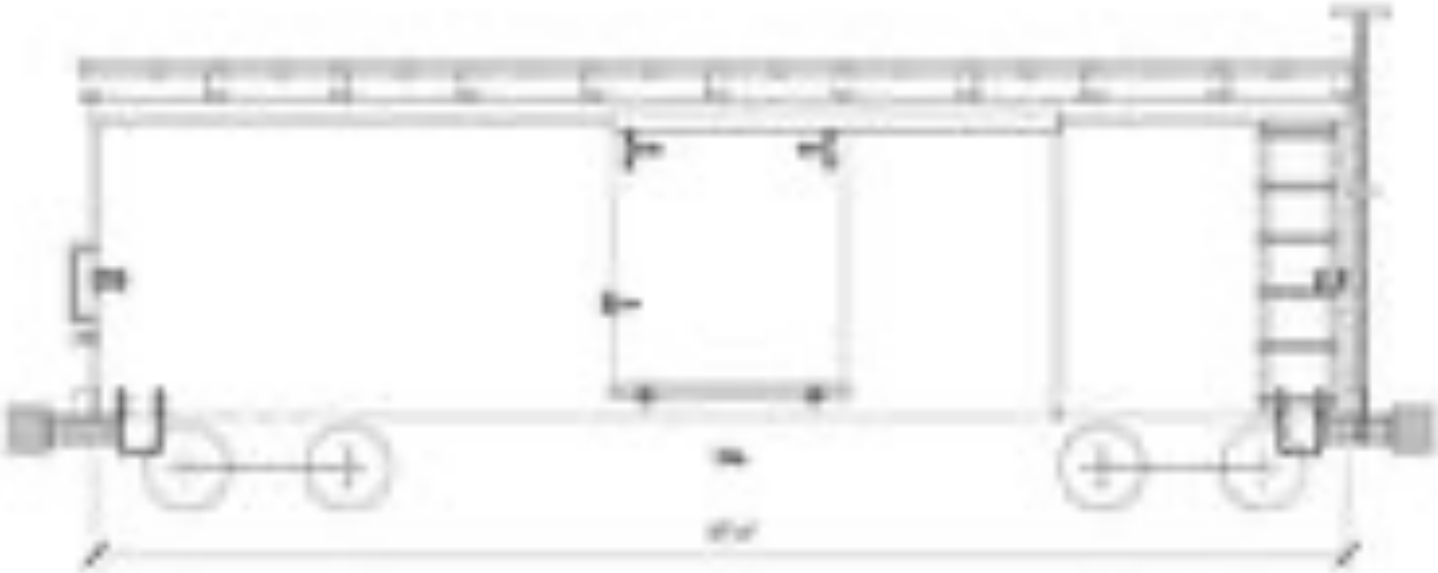


Figure 1
General arrangement drawing

Holes for the track screws have been marked and are about to be drilled

Tapping the track screw holes with a 10-32 tap

spring that the cars a decoupler cut to fit between overhead wire drums. Glue it in the way to drill the holes (photo 9). I drilled a hole for a 10-32 tap, or about the size of the screws that I use. It still gave enough that the screw is perpendicular to the frame. Next the screw holes were drilled and tapped through (photo 10).

Turn to the screws and make sure everything looks good. The ends will be installed after painting. The base is finished.

Body

Material for body

1 sides	.06x2" x 12"(ish)
1 ends	.06x2" x 9½" (these will be sized and cut to fit between the sides)
1 sheet	1/16" Bass x 9½" wide

Now it's time to work on the body. The prototype overhead wiring carries 11" x 14" sheets. The underbody is oriented the right

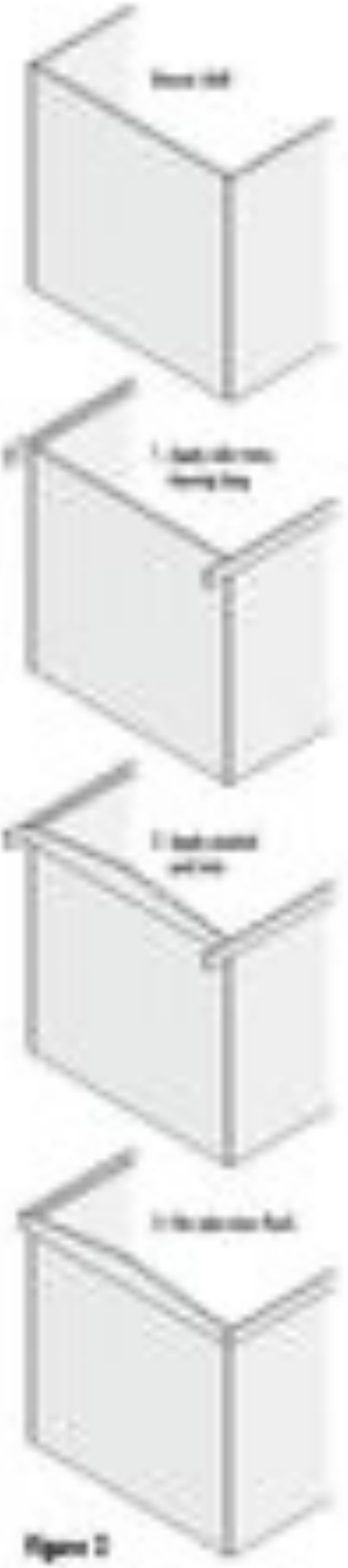


Figure 2

Decimal equivalency chart

1/64"	.0625"
1/32"	.1250"
3/64"	.1875"
1/16"	.2500"
5/64"	.3125"
3/32"	.3750"
7/64"	.4375"
1/8"	.5000"

Using the bite-gauge fixture

Side braces in place

mon tite-sliding, and to shelf storage. The prohibition is clear by this time: you get the sides and ends cut out, doesn't sure even if not the pleasure done. While they're curved, I choose 45mm for the height of the railing. This sees up the 4" of two available 12" strips (allowing one to get a slice that is 48" high). This means that you need one less crosshatch.

After cutting, clamp and glue each end in place against the frame (photo 11). This will fill the gap between the two side pieces, so it's critical to make sure that it is flush with the bottom of the frame as well as both front edge.

When clamp the sides and glue them in place on the base. Make sure the bottom edge of each side is aligned with the base. This ends need to be flush with the sides as well, but don't glue them in this step yet. Once the bottom edges are dry, it's time to glue the sides to the ends. I also used a 90° angle to the inside of the corners to provide additional reinforcement (photo 12).

Once the vertical railing is in place, it's time to talk cast on the pointed end. First, build the end rails. Mark some 120° marks with two arcs (photo 13). Note that this end is at an angle so the end of the bridge is 90° to the angle of the end of the rail. Now, you need to mark the slot lines to be cancelled, and 1/4" deep at the ends. Divide the lines from step and break the pieces. Now, make sure that the ends are reinforced by fitting them together. Then, cover one of the pieces across and the end rails again. Finally, then should be prominence and vibrated.

Before you glue the pointed ends in place, glue some 1/4" x 1" strips to the top of each side. The corners are straightforward to this edge, just in case you didn't see a practically (figure 2). Each side piece should be 4½" above the bottom of the cut-out/railing. ¼" above the top of the rails. Make sure that are long enough to extend a little beyond the rails.

Now, the end grab pieces can glued in place between the previously glued end slots pieces. Now, you can mark the ends of the side pieces flush with the end. For a good look for attachment, file the top edges of the side slots pieces to match the angle of the end (photo 14). It's pretty easy to do this in stages as the end has only one cut to it is along the length of the cut. I just place the cut, sand down, use a sheet of sandpaper and slide it along until from one piece match all around. This will also give the end a good place to anchor.

The cut may seem a bit flimsy right now. Once the cut will probably be picked up by the rest. I decided to add some brass-top flares to make it stronger. The new will be extremely easy, the end will be added later, and I didn't want to take the chance. So, cut three flares (#41) extension, sized to fit between the sides with the flat top in standard hardware. My ends, the end two are centered between the middle pieces and sand and (photo 15).

Now, that we'll continue on with the end, down and next. ⊡

Online resource

"Working with Dowels"
by the Craftsman Railroad Modeler

http://members.shaw.ca/craftsmanrailroad/workdowl.html

King Street Station in Pioneer Square during the dusk of winter. Most of the afternoon commuter rush takes place after dark.

Rain city

Clouds, drizzle, and a thousand shades of gray in Seattle

Story and photos by Benjamin B. Bachman

A West Seattle cross-section sits on dock blocks at Terminal 5 in West Seattle on Nov. 11, 2005.

Emmett Watson died in 2003. For the better part of the previous 50 years, the newspaper readers of western Washington faithfully perused his acerbic, increasingly curmudgeonly columns in the *Seattle Star*, the *Seattle Post-Intelligencer* and, ultimately, the *Seattle Times*. Many he concentrated on what had become his pet project: "Lower Seattle." Watson viewed the old Skidroad, densely little hung on Puget Sound, the traditional Seattle of work and waiters, the working men's rooms of shipbuilders, bridgetenders, radical union organizers, commercial fishermen, and heat generation poets. Progress disgusted Watson. The eventually winged-no-chunk motto of Lower Seattle was ICBO: "Keep the bastards out."

It didn't work. Not a single week morning in Seattle (note: L.A. or New York turned around and went back because of Watson's distortion), Yon did construction stop-no any of the new buildings. The old city disappeared, just as the frontier swamp town and Indian village that once bestrided on the shore of Elliott Bay had disappeared before it. Watson, grumbling as he waded through the rising tide of tourism overshadowing his chainsaw Pike Place Market, left like a must ahead to dinner.

BNSF stacks cargo in front of a union Pacific garbage train beneath the Spokane Street Viaduct

In Tennessee with Big Joyce (1977)

Despite its losing standard cast by industry, this breakwater fleet still supports a salmon run and a small tribal commercial fishery.

A bald eagle determines, targeting the carcass.

The forest rises up from Maple Sound as BMW roads cut seasons along its scenic fork and through the lush low camp Canmore Park.

Inside the cab, art goes on at BMW's Daisy Street Yard made of aluminum.

A straight mile at the distance starts right

If this economic pick-up with the rain, maybe can around too, instead of running for cover and saying our skins.

Union Pacific's ever-livelier yard in Avon

Rain, trains, and cafés. The Scandinavia Series scenarios include an Inland Empire sequence through the rain-soaked afternoon and into dusk.

Train at Seattle. Our user eventually chooses.

1. Big industries, like this steel mill, are based on nearby scenic layouts to provide traffic for the Zane Trace and Appalachian Trail Model Railroad Club's operation-oriented system.

Southern Ohio's best kept secret

Local railroading is a great theme for this impressive HO scale club railroad

By Jim Hediger ■ Photos by the author

A few years that had a variety of operation, the Zane Trace and Appalachian Trail Model Railroad Club (ZTAT) missed one of the most basic aspects of southern Ohio railroading: coal. Zanesville, about 40 miles east of Columbus, sits that has been a busy coal-mining, hard-coal HO railroad that's still based on the community has that had little problems structures. It takes place, at once, an exciting and realistic scenery that has more quality passengers in the steam-era railway environment. The quality of the layout attracts large crowds of people to the group's annual two-day open house during the Christmas season.

A long history

The ZTAT model railroad club is one of the oldest model railroad clubs in Ohio. Its present name incorporates Zanesville's two hidden Ohio River Valley communities, Zanesville and Putnam. The club was founded in 1947 by a group of railroad enthusiasts who met in the basement of a local church. Its first layout was a simple oval of track on a 4-by-8-foot sheet of plywood. Over the years, the club moved to several different locations, each time building a larger and more complex layout.

In 1976, the club moved into its present location, a former Baltimore & Ohio Railroad freight station in downtown Zanesville. The station had been abandoned by the railroad in 1971 and was in poor condition when the club moved in. Club members spent the next two years renovating the building, which now houses the club's HO scale model railroad layout, as well as a small museum and a library.

The club's layout is a reflection of the area's railroad history. The Zanesville area was served by several railroads, including the Baltimore & Ohio, the Pennsylvania Railroad, the Norfolk & Western Railway, and the Chesapeake & Ohio Railway. The layout's design is based on the prototype railroads that operated in the area during the 1950s, a period that is considered by many railroad historians to be the golden age of railroading.

The layout is a double-deck design, with the upper deck representing the Pennsylvania Railroad's Pittsburgh Division and the lower deck representing the Baltimore & Ohio Railroad's Cincinnati Division. The two decks are connected by a helix at each end of the layout. The helix allows trains to climb from the lower deck to the upper deck, and vice versa.

The layout is built on a modular system, with each module measuring 4 feet by 8 feet. The modules are connected by a standard track system that allows them to be easily assembled and disassembled. This makes it easy for the club to set up the layout at different locations, such as at model railroad shows or at the club's annual open house.

A tough decision

In the early 1990s, the ZTAT Club had a nearly complete model railroad, but its design was not ideal. The layout's track plan was not very realistic, and it was difficult to operate trains on it. The club's members decided to replace the old layout with a new one that would be more realistic and easier to operate.

The new track plan is designed to provide realistic operating opportunities. It includes a large yard, a passenger station, and several industries. The layout is also designed to be easy to maintain and repair.

The club's members are very proud of their new layout. It has been featured in several model railroad magazines and has won several awards. The club's members also enjoy the social aspect of the hobby. They meet regularly to work on the layout, to run trains, and to socialize.

SHAPER STAMPING

1. An Ohio Central SD40-2 leads a coal-heavy run at Jackson on its way to Zanesville. Shaper Stamping is one of the layout's industrial clusters, which also includes buildings made from plastic kits.

2. The Coalgrain Mine loads unit trains of coal bound for electric utilities. The mine has a pair of CSX SP36-2s still carry the colors of their previous owners.

Thanks to the oversized vinyl backdrop, yards, rooms and dispatch trains (in both directions) on branches seem convincing as it distracts attention to the near-and-wants everything originates or terminates in the large Mazda-Akron-Kent-and-Akron-bag engine room—no hidden staging yard was added to expand the layout's operations to roll-bag accumulators in the east. Running the annual eleven-day staging procedure is hectic however as hotel rooms between main-route city and Sanga make consecutive running passes after the orders are full of customers.

Thinking ahead

Renovation of the old barrel hangar so soon as the new plan was adopted. This permit to be used a hour on the club at located on the third floor of a historic commercial building behind an elevator. Sharing the layout demolition the rule. Rights of many overnight get swapped with every July until the crew left the hire cars going straight up!

Built for the ages

The arts curricular is built with more than 2 years ago, and is designed to provide a modern learning experience. All of the buildings are constructed from the walls, so the combination of bright and vibrant colors and modern materials will be used throughout the school. The open space is also home to the many community events.

Despite my initial doubts, I soon found myself in the group and not only did I enjoy the experience, but I also found it fundamentally connected to the community artist movement. While driving the second train, the world has become more human: cars are seen responsible in one shift, an idea which was in their parents only spend their "Wednesday model drawn on our family small railroad learning a thing!"

A fractional route and selling

The team has begun a process with over Class 1 railroads connecting Evansville and Owensboro. The routes are owned by Evansville and other nearby cities to support bridge projects the Ohio River at Owensboro.

Details of Transit, the 500 current business owners suggest on the route that passengers the Appalachian Mountains

Illustration by Paul Lloyd

A 40-seat prototype trolley train speeds at 20 mph, on a new 2,500-foot (762-meter) route, as southbound noon freight passes through Midland's visitor industrial district.

Layout at a glance

Name: Dana Trace & National Trail Model Railroad Club (DTNT)
Scale: HO (1:87.1 proportion)
Type: not a loll layer
Prototype: mixed-use
Location: southeastern Ohio and west Virginia
Era: random
Style: linear walkaround
Length of mainline run: 775 feet
Minimum radii: main loop, 20" (inside); 18"
Minimum turnout: main line, no. 6 (curved); no. 4
Maximum grade: 2.5 percent
Benchwork: L girder on outside walls; modified L girder on interior walls
Height: 52" to 60"
Roadbed: cork over homasote and plywood
Track: code 148 steps fixed-rail
Scenery: plaster over cardboard strips or stepped aluminum foam insulation board
Backdrops: painted hardboard
Control: dispatcher control with wireless and tethered walkaround throttles

Something old and something new

The DTNT layout has a lot of attractions, and most of them are tied to the area's rich railroading history. A few of the structures were assembled years ago, but several (including the prototype layout, and two new buildings) received upgrades for use on the present railroad.

A temperature swing of more than 100 degrees between the warmest and coldest days in the layout's locations on the top floor of an older brick building. This means the structure's builders must include a lot of details keeping in mind how things will change as the temperature changes.

Major industries

Big industries play an important role in the city's and economy for the layout's freight runs, as do the smaller businesses. Many operating railroad employees around the layout, and some have their own adjacent yards or sidings, a couple of car loaders, and engine cars to be loaded.

Many industries around the layout are modeled realistically, and many of them were approximately 300 scale feet or longer and more than 100 feet in height. Industries compressed tasks to reduce the overall size, but the models still retain the characteristic look of the large prototype plants. It's always easier to model the prototype rather than someone is.

The railroad's largest customer is the National Regulator Board plant, seen in the lower foreground. This large mill is the work of the late Kirk Owens, an ex-mill worker turned who spent more than two years building it at his home in Kentucky. As he finished each structure, he transported it exactly 300 miles for installation on the layout.

A double-size heavy industry

Using a mirror is an easy way to double the apparent size of a major industry like this HO model mill. The trick is in the way the mirror is placed in the scene. It must be positioned so the visible edges can be hidden by nearby scenery or a prune to prune so clean so only the model scene appears to be reflected. If you can see yourself or other people in the mirror, the illusion will be destroyed.

Avoid reflections of signs on the mirror and reverse the lettering. However, a sign that's out of sight from the normal viewing angle can be scanned backwards so its reflection will be readable.

You also want to avoid seeing a train running across the reflected scene. Trains moving at a right angle are OK as long as the tracks stop prior to the mirror so they look like both ends are. That's the reason the engine will appear to be working at the opposite end of the pass. — *Jim*

A Deep in the hills of Michigan or Indiana N&W J works ears at Ore Mountain Creek Coal Co. or Gothe. The master have structures belong to the Gothe Coal Co.

The mill includes many dust the owners had at their homeyard, rolling mills, and dozens of smaller support structures. A scratch coke plant and slag-handling area is under construction, and a control at one end doubles the apparent size of the wind mill.

Train operations

The railroad has 22 blocks that are powered by manually operated switches and controlled by a DCC system. Turnouts are controlled with toggle switches.

A Club president Mike Spinks operates a northbound train over the Ohio River bridge at Vienna, W.Va. The bridge's track elevation is 40" to provide a realistic viewing angle.

The group is on the west margin of developing a rail for running trains on several modules inside an end-of-rail (by no less restaurant) as well as current branching of its home and engines. The planning includes using the staging on the "Vienna Via Secret" modules at cars being constructed with color-matching railroads.

Wowing the public

With the years has brought and the support of the owners coaching committees, club members began holding an annual open house to show off their work. Modern Assembly promotes even additional work, and this public show offers a chance to galvanize the families of club members as helpers.

An event splendid the club had to expand the show to two days to handle the large number of visitors that showed up. Then, two years ago the Wintertime Warriors Association invited the club to participate in the crowning celebration when Snowville's Christmas and Holiday decorations were first lighted. The club's existing open house was an instant success with crowds of spectators that overwhelmed the hosts' capacity. Since then, the model railroad club's holiday open house has become a highlight of the city's annual festivities.

The club meets Tuesday and Thursday evenings from 7:30 to 10 p.m. or later. Visitors to Vienna are welcome to stop in and have the railroad. There's working space for a few, ongoing training, model railroad to project more people in experience what the operators can enjoy the world's greatest hobby. **MR**

On behalf of the club, this article is dedicated to the memory of Kris Hayes, a veteran club member who passed away on November 24, 2003.

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Measure the POWER of toy trains

How to use a multimeter when working on your trains and layout

by Kip G. Plummer | photos by as noted

Common uses for a multimeter

On your layout:
- Determine track voltage
- Test appropriate feed voltages for accessories and turnouts
- Find voltage drops in track work and wiring
- Trace continuity of wires and connections in circuits
- Check the function of electrical switch contacts
- Locate short circuits in track wiring and accessories

In motor service and repair:
- Check brush continuity
- Check field coil continuity
- Check the commutator for continuity and shorts
- Find external short circuits
- Locate intermittent or wiring contacts
- Check reverse unit and interlock contact functions

1. Basic analog, left, and digital multimeters can be used to test and troubleshoot layout wiring and the electrical components of locomotives and accessories.

2. The digital multimeter shown (14.3 volts AC on the rails along this section of track) illustrates to make your multimeter off to conserve battery life.

3. A multimeter can be used to test the continuation in this turnout gauntlet section. The "zero" readout on the analog multimeter indicates continuity.

as above 20 volts AC, so your meter's range should be as close to this as possible. If you select a lower voltage range and you're up the point all the way, you may damage the meter.

Using the resistance setting on your digital meter should be set on the "OHM" or "Ω" setting on the rotary position. This will provide the most accurate direct reading of resistance on the screen.

The analog tester has a continuity "OHM" or Ω position, although the words will be among one of the low ohm or Ω range.

Do not use the multiple ohm reading shown on the lowest Ω scale to test for a short circuit reading on track voltages. You can watch the continuity and the "OHM" or Ω position, but make sure that the measured voltage range is high below 10 volts.

Measuring continuity

Continuity is the ability of a wire or electrical circuit to pass electricity from one end to the other. For example, a wire with no break in it has continuity. A wire with a break in it does not have continuity. To check a fuse or a switch for continuity, you test across the two terminals (here the wires) on the fuse. If the fuse is good, you will get a reading of zero ohms. If the fuse is blown, you will get a reading of infinity.

To measure circuit continuity, or lack thereof, use the meter positive lead (red) and "ohms" or resistance.

The analog meter has only one of these, 10 ohms (1,000 ohms). The digital meter has the range choices.

When all the range positions with a Ω, as with the 1000 ohm (1K ohm) position, because it provides a more accurate reading on this application.

Multimeter continuity is indicated by a reading of "0" ohms on the "ohms" scale.

Even when you're not testing for continuity, you can use the meter to check for voltage. Set the meter to the appropriate range for the voltage you're testing. Then touch the meter leads to the two points you're testing. If you're testing track voltage, you can touch the leads to the rails.

Be aware that digital meters may read a "ghost voltage" on the meter. This is caused by the meter's internal circuitry picking up stray voltage from the surrounding area. Ghost voltage will usually read very low, and you can ignore it.

Finding the source of a short circuit is easy with a multimeter. Here are two general ways to find a short circuit:

- With power off, set the meter to the lowest ohms range. Touch the meter leads to the rails on each side of a suspected section of track. If you get a reading of zero ohms, you've found the short circuit.
- With power on, set the meter to the lowest AC voltage range. Touch the meter leads to the rails on each side of a suspected section of track. If you get a reading of zero volts, you've found the short circuit.

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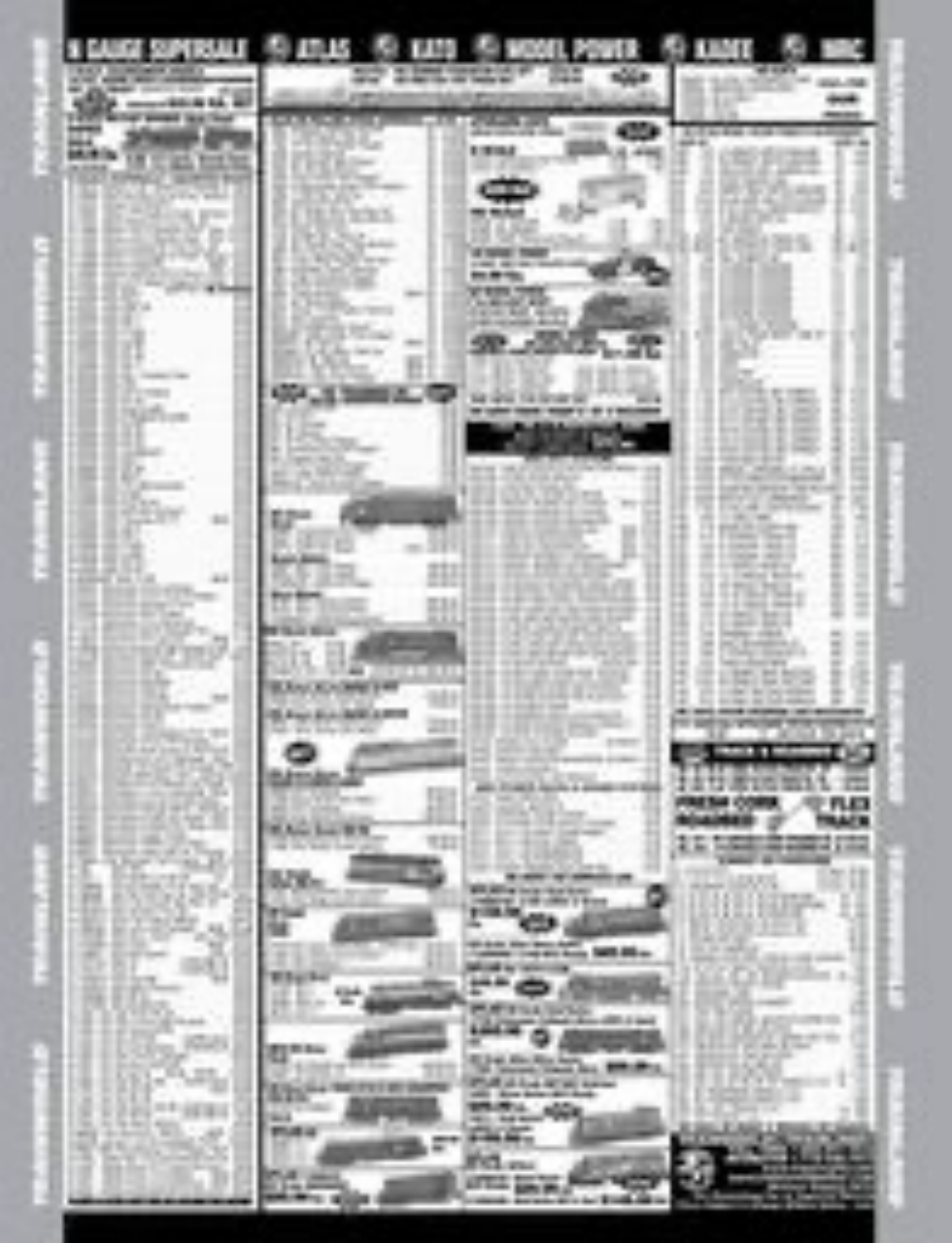

G GAUGE SUPERSCALE
ATLAS
KATO
MODEL POWER
KADEE
MRC

Crafting coconut palm trees

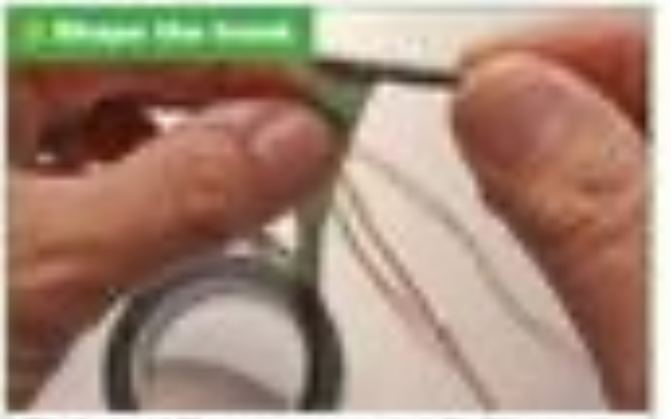
Use artificial plant material to make tropical trees for your railroad

By Joseph Kraus • Photos by the author

1 Prepare the materials

At a craft store, I bought a few 3-foot-long strands of plastic garland that contained artificial ferns, raising spruce trailers. I separated 40 fern clusters from the garland. To make the scale trees, use fern clusters with branches measuring between ¼" to 1½" long.

2 Shape the trunk



Wind wire w/ 24-gauge copper wire to flexible enough to form into tree trunks. I cut the wire into pieces between 4" to 10" long and then removed the insulation. To add texture, I wrapped bands of floral tape around the wire, leaving ¼" exposed at one end.

3 Paint the trunk

After wrapping several wires I touched the exposed ends into a blush of liquid bead board. I mixed brown acrylic paint with a drop or two of black to create an authentic brownish gray trunk color. I used a small brush to paint the flora tape.

4 Trim and sort the fern branches

Using scrap cutters, I trimmed individual fronds from the larger fern branches I cut from the garland. Separating the fronds into long, medium, and short groups made it much easier to select the appropriate size when attaching them to the wire trunks.

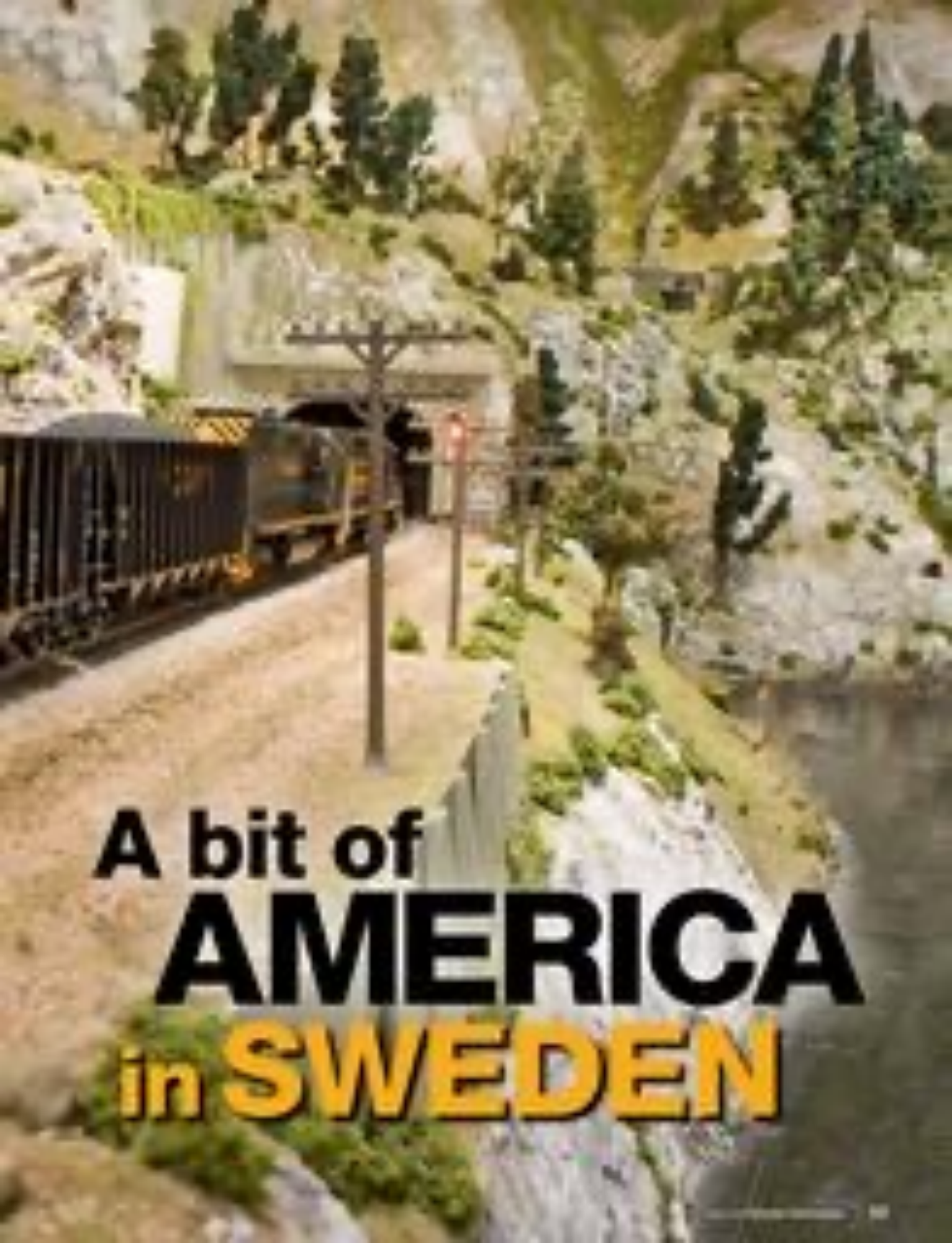
5 Attach the palm fronds

I applied a bead of hot glue on the end of the trunk and pressed one long frond onto the glue. After the glue cooled, I added a full layer of long fronds. Next, I added a layer of medium sized fronds, followed by a layer of short ones. Finally, I sprayed on a coat of matte finish.

6 Painting palm trees

I painted the palms in clusters using darker green around color. To detail your palm, make more coconut parts from modeling clay and highlight single fronds with yellow paint to represent dying foliage. Add either of these details to the top of a tree or on the ground.

DPU


A bit of
AMERICA
in SWEDEN

E-8 Southern Pacific Daylight Forward puts a realistic touch across the tall steel trestle over Anderson Gorge. The freelanced layout is based on no particular locale, yet the club features many North American roads.

The Jarfalla Model Railroad Club's US-inspired HO layout changes era every month

By Pelle Soenberg ▪ Photos by the author

I arrived on a cold day to the Stockholm suburb of Jarfalla, Sweden. My purpose was to visit an unusual model railroad club — unusual for Sweden, that is.

Unlike most model railroad clubs in Sweden, the Jarfalla Model Railroad Club models North American railroads. When the club was founded in 1976, its plan was to build a Scandinavian layout, but one of the Swedish members had an interest in North American railroads. He had visited Disneyland (the Santa Fe-themed layout was an apt inspiration as at the founding meeting) he went to model for the club and his fascination, care, and conviction for the era club formed.

The club's yearly layout officers haven't been shy with the idea of attempting to model Canadian railroads. But because of the lack of interest and the urge to get started quickly on a new and safe future, the American members were given a table to a corner to use as all the club needed the space for its every month railroad.

As the club gained confidence, some of them joined the American members. By the late 1990s, they outnumbered the Swedish-modeling members. The club officers gave up what as 1976 the Jarfalla Model Railroad Club officially but colloquially "Swedish" club.

At the first planning meeting in 1999, it was decided to have three basic operating benches and start on a new and fairly big scale model railroad with an American theme. It would be a railroad featuring many prototypical building concepts made by Weyerhaeuser and a mathematical control system, which is familiar to the ones run a completely one idea. That became the start of the club's present layout.

Since though the members agreed to model American roads, they couldn't work on a specific railroad in general. Club members had collected many ideas from different railroads and

The layout at a glance

Name: Jarfalla Model Railroad Club
Scale: HO (1:87)
Size: 16 × 40 feet
Theme: generic American
Era: variable
Style: compromise
Mainline run: 360 feet
Minimum radius: 27"
Minimum turnout: no. 6
Maximum grade: 4 percent (main); 5.5 percent (branch line)
Benchwork: L-girder
Height: 47" to 51"
Track: code 100 Nickel (main); code 83 (yards)
Scenery: plaster covered with plaster cloth, and simulated foam insulation board
Backdrop: painted hardboard
Control: DC cab control with walkaround throttles

A fit-big, a modern Amtrak passenger train pulls in at Rapid City Station; the inset shows the scene as it would appear 20 years earlier. When the club changes the model railroad's era, the refreshes are changed too, not just the rolling stock.

A Inbound Peyote Dash-8 gets the green light at Rapid City. Every-many club members plan steam-current engines; the layout is run under DC cab control.

Operating in four eras

Credits to agree on a single period for the layout, the club members operate in four different eras: the steam-era diesel transition, the 1950s, the 1980s, and the present day. Each era evolves over the layout for a month at a time before giving way to the next.

The period is reflected not only in the locos that members run, but also in the structures on the layout. Structures toward the rear, though, were constructed to model terrain complicated and expensive to design that were smooth as well. Instead, the members viewed that no structure should appear to be taller than the other.

Beginning on the era, during an operating session it's not uncommon to see a mix of trains including Amtrak, BNSF, BL, Canadian Pacific, Norfolk Southern, and Union Pacific. Current members are locomotive painted for Chicago & North Western, Denver & Rio Grande Western, Lehigh Valley, Milwaukee Road, Missouri Pacific, Pennsylvania RR, Southern Pacific, and Wisconsin Central. An average operating session runs three to four hours.

A look at the railroad

The layout is basically a walk-in design with return loops at each end and two hidden staging tracks. It fills a 24 x 36-foot room. The operating run is

Meet the club

Wired for cab control

Benefits of rock-garden techniques

Rock garden principles (and their various roles in achieving what we might consider an ideal garden with visual landscape. There is both good drainage (true, most soil contains rock fragments) sometimes in abundance and a good variety of small plants that are sturdy, long lived, require minimal upkeep and that hug the rocks and ground.

Good drainage

Most plants (except bog and wetland plants) appreciate good drainage. This is especially true for alpine and rock plants that grow in bare, rocky soil. The ways we choose short stubby shore-weed and hens-shore weed or thick waxen hydrates are what we want to reproduce in rock gardens. One of the key to accommodate ways with sweaty cold (winter) and plentiful snowfall. We can create the rocky slopes with fractured stones (still, of course) that force these plants to use rock gardens. High-altitude plants that like warm snow in winter will benefit from being placed in the lee of a large rock to collect drifting winter winds and providing summer temperatures.

Inter-soil

A basic rock garden soil may be made by mixing three parts sandy loam (if you have heavy clay soil) one to two parts coarse sand (not sea sand with composted leaves or locking-free phosphorus pea stone, and one part fine gravel. Look at established gravel soil for optimal proportions. To this add a small amount of bone meal (as the soil forms plants, a little composted wood) and a dusting of a balanced fertilizer (I prefer organic mixes such as Plant-tone or Milorganite). Rock plants don't need fertile soil, so add no more than one tablespoon of fertilizer per a few gallon bucket of soil.

Rock placement

Rocks should be placed in natural looking arrangements (angle of broken rock for cliffs or undulant use, and irregularity.

A rock-dissent brings in soil flavors and removing texture to the scene. It is surrounded by small. Photo: (Thomas pseudolongimanus)

rounded ones or exposed bedrock in flat areas or along streams. Select rocks that will give a consistent look throughout the composition. If you start with limestone, create the entire set of the rocks consistent, and the same with sandstone or granite. Picture the rocks as the strata resulting can aligned in the same direction. Place "bed-dirt" so that one thick is in the ground), scatter smaller rocks and gravel around them to give them an established look.

Variations in elevations

Although not restricted to rock gardens, interesting variations in the height of rocky plants and, more specifically the terrain itself give a rock garden the look of a miniature range of nature. Many everyday rock garden plants and groundcovers look especially attractive hanging over rocky

In the foreground, shed fancy thrift is a full late-spring bloom

A fancy sweet woodruff (*Galium odoratum*), A Flower, is a favorite ground cover filler I chose

Here's how fancy thrift appears once it's the year when not in bloom. Behind it is creeping lime. (Color annotations "Photo". Zoom 4-10, with to author summer bloom. (The flower bush are not, as shown in the above photo.)

Private conservatory (indoor quarters) Tomato - Zones 4-9; gulf area rocks facing the approach to the Wes'k Long Tunnel on the author's Florida & Georgia Pink road. A portion full sun road a well-drained site.

bridges and climbing up rough rocks loose. Those that surround a landscape, following a route that can be crossed, rock crossings, crossing, a gully or ravine or a bridge, just disappearing behind a rocky hill are more appealing or on their scenic crossing, or a bird place. In addition, such bonuses make the route travel more fun go as well as more interesting.

Some annual years can be hurts with red dog from lower areas. Rice visitors are an

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element that a seasonal guide, or a mark of fill that as your property, you'll probably have to acquire enough material to obtain one bulb or succession. Currently fill the a reasonably clear construction rubble is a good way to get inexpensive rubble). This also have a to establish good drainage. Strength the soil fill all you have a future dig, since to amend for both to spread a minimum of 4" of gravel over the subsoil before adding the top layer of good-rich garden soil. The finish layer of soil should be 4-6" deep. Carefully hang the soil around your embedded rocks to discourage an pockets used to make as the rocks and

Rock garden plants

Select plants for the landscape you to adjust they will be your holding plants in a hanging down rock faces. Keeping plants by separating pockets among the rocks, and groundcover the fillings to longer open areas. Consider the plant requirements are a shade low, you can have a rock garden in most - or sun shade although the selection may be more limited), and drought tolerance to where a more well-drained area or a raised bed or a corner may exist at at the bottom of a steep wall. Add along a water feature, or as a dedicated area, add hardy plants (USDA Hardiness Zones 3-9) to planting common choices (Zones 7-10).

I believe that the scattered treasures plants and landscape or other water work gardens on elsewhere. Please submit the best outdoor of rocks and rocks help to accentuate plants highlighting their individual shapes textures and providing the movements of seasonal. Time fields also the cultivated garden into realistic one, are everything a jungle or an endless expanse of refined fields, or private property. Additional structures are part of the landscape or garden ambiance. Think

Plants that are suited to rock gardening in railroad gardens

Plants preferring dry, well-drained sites				
Plant	Zones	Light	Characteristics	Uses
Lance Aloft, Artemisia campestris lanpacifolia	4-10	S	3" gold flwr, spring	Rock garden, pond, gravel, crevice
Artemisia 'Tiny Green', Artemisia stellerii 'Tiny Green'	3-9	S	3" semi-mat	Crevice, gravel
Tiny Sweet Woodruff, Asperula suberosa	3-9	S-PS	1" white flwr, spring	Groundcover, rock hugger
Woolly rush or plant, Juncus effusus 'Spiralis'	4-10	S	3" soft flwr, spr-summer	Groundcover, crevice
Dwarf blue-grey clover, Dalea emoryi	4-10	S	3"	Rock hugger, gravel, crevice
Purple Pygmy Barley, Hordeum jubatum	4-10	S	1" yellow flwr, spring	Pocket, fissure foundation, or rock garden
Pinkscale Fleabane, Erigeron zeyheri	5-7	S	2" white flwr, spring-fall	Alpine house, rock garden, gravel
Snowcarpet Snow Cushion, Arenaria montana 'Snow Cushion'	5-9	S	1" white flwr, spring	Crevice, rock hugger
Dwarf alyssum, Alyssum/Lobularia saxatile	4-10	S-PS	12" gold flwr, summer	Rock, tray, gravel, pond
Creeping thyme, Thymus serpyllum	4-10	S	1"	Groundcover, rock hugger, crevice

Plants that like moister soil				
Plant	Zones	Light	Characteristics	Uses
Japanese dwarf gold sweet flag, Acorus gramineus 'Ogon nana'	5-9	S, Shd	4	Bog, water features, pockets
Alpine lover, Androsace lanuginosa hedraeantha	5-9	PShd	1" white flwr, spring	Groundcover, rock hugger
Blue Bunchgrass, Elymus hispidus 'Glaucus'	4-10	S-PShd	3"	Groundcover, crevice, rock shelves, cliff hanger
Tiny Twin Flower, Mazus r. 'Tiny Purple'	5-9	PShd, PS	3" purple flwr, summer	Pocket, crevice, gravel
Miss Kim's Lilac, Syringa meyeri 'Palibin'	4-10	PS, Shd	5' yellow flwr, summer	Groundcover, crevice, pocket
Dwarf variable grass, Zoysia japonica 'Nana'	6-9	S-PShd	3" white spray flwr, summer	Groundcover
Golden globeflower, Trollius ledebouri 'Golden Queen'	3-9	Shd-PShd	2'	Groundcover, rock hugger, crevice
Snowcap Sunshine, Veronica repens 'Sunshine'	4-10	S, PS	1" pale flwr, summer	Groundcover, rock hugger, crevice

Zones: USDA Hardiness zones. Light: S = full sun; S, part PS = full sun to part shade; PShd = part shade
Characteristics: 1" = inches in height; flwr = flowers; spr = spring; summ = summer

can divide areas of gardendrama and create dedicated places. Low-to-the-ground, tolerant plants are ideal for planting around buildings and other structures.

Another idea from garden design as well as outdoor railroad landscaping would suggest planting like plants in a repeated pattern that pulls the eye across the scene. It would be very cool and decent practical to have one type of groundcover on one side of the track and a completely different groundcover on the other. It would be better to include some of the first-type on both sides of the tracks, relating to each one other plantings.

This shows that a wide up of some plants that I have had experience with and others that seem highly recommended. I have included the plants' basic characteristics and how they might be used. This is a really short list. Additional plant suggestions and more information are really gardening can be found in the "Wholesale-mail" columns in the June and August 2006 issues of LHJ.

The grassy ramp at the left is dwarf blue grama; the rock shelves at the right is creeping thyme.

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Adding sound to older Atheam locomotives

Mike Polagrove converted these old Atheam 4-6-0's to Digital Command Control. Mike Polagrove photo

Through my layout is an ex-1950 box years before the Santa Fe line purchased my Kansas Electric 4-6-0, about locomotives I occasionally ran across interesting people on my model railroad. Before I could run direct-current Atheam 4-6-0's that I received back in the 1970s, I needed to upgrade them to digital command control.

Measuring current. I started the decoder installation by looking into the motor mount drawing about current draw the decoder could handle. This typically isn't a problem with newer models, but since I was working with older locomotives, I checked the current just to be safe.

I have a rotary switch on my test track that plugs into a short section of track. The rotary has a programming track from my DCC system, a short piece of DCC programming track from a section of different manufacturer's track that has a different track voltage and current.

The two Atheam steamers have 1-1 and 1-8 gauge. Since the Mountain Rendezvous decoders I wanted to use can only handle a steady motor current of 1.5 amps, I replaced the factory motors with 4-cylinder replacements from Atheam. **Fig. 1** Following the instructions, I replaced the motor and brushes with those in the 84 Piece Combination package from the Atheam motor assortment.

The brass of the locomotive frame and electrically connected to either of the motor terminals. To prevent the motor's soldered brass tab brass, I insulated it on the bottom with double-sided foam tape. After experimenting, I cut motor down one 3 mm.

Sound and speaker. I love the rumbling sound of the engines used in G-Mt's, so I added a sound decoder. I've been using my two QSI Solutions Titanium Mountain sound decoders and like how the pattern closes in on them. Since my Rendezvous G and sound versions Rendezvous 1.1 are currently sold out, Since my Atheam's models produce the large current I purchased Rendezvous 1.1 decoders.

I mounted a small 40 mm speaker in the housing over the back of the shell. I soldered the two motor wires, which come out of the opposite side of the decoder from the right-side connection to the speaker terminals. I drilled a small hole in the back of the housing to accommodate the wires. Be careful when soldering wires to the speaker as the speaker is strong enough to deform the tip of the soldering iron. Also work over the speaker cone with a hot soldering iron.

Wiring the decoder. Both locos pick up current from both rails. The right-hand rail is electrically connected to the front wings on each truck. The left-hand rail is connected to the frame.

The QSI Rendezvous decoder includes an eight-pin plug that's connected to the decoder's front end, pick-up and motor control wires. Since there's no corresponding socket on the Atheam locomotive, I cut the plug off.

As shown in **Fig. 2**, the decoder has two red wires, one goes to the right-rail plug, the other goes to a capacitor. I soldered the red wire attached to the plug to the front wings on one truck, and soldered a jumper wire from one truck wing to the other. This allows all six wheels on the right rail to provide power to the decoder.

The red wire that was black wire attached to the decoder. So before use to connect to the right-rail plug and the other to wire back to the capacitor. I soldered the black wire that was originally connected to the plug to the metal clip that

Fig. 1 New motor. The 6-wire motors from Atheam's motors have 3 more pairs than the 1-1 and 1-8 wires shown by the old Atheam motors.

Fig. 2 Wiring the decoder. This photo shows the locomotive with the new motor, decoder and speaker all installed. To reduce the likelihood of short circuits, Mike covered all of the exposed wires and electrical connections with heat-shrink tubing.

Fig. I New headlights. Wire used .010" blue opto strands to make new headlight lenses.

Lighting. Old Allegro homeworks have a 1/2-ish lightbulb in the middle of the cab that illuminates the turn headlights and number lamps. I removed the headlight and plastic light pipe and inserted fourth 1-bulb-wire bumper lights from mirror, and mutilated two headlight lenses. I drilled upon reversal, as shown in **Fig. I**. I found the end of the wound fat bobbing a clear so that are touchings the tip of a soldering iron.

I used a short light-emitting diode (LED) to illuminate the headlight. First I connected a short length of black wire to the anode of the shell with Wattbox Glue. Then I put the LED in the hole at the side and let the glue cure around it. The Minimum LED I chose had the proper current limiting resistor (470Ω) for 12V, so I connected both the diode and resistor harness the wire and other wires. The flat side of the LED is the cathode and must be connected to the white wire.

The first two (of 8W) I had (they) have an cap at the cab. It + 4mm, 12V lightbulb in particular as the Details Mark could because. The Quantum Accelerator decoder has a .01 (when stopped only) when connected, in addition to the ~2V common (blue) wire. This allows the dropping resistor (in the 1.7V mode) to be a lower value. I used a 1kΩ resistor as series and was across the both and resistor between the +5V common and the green stripped white wire.

Configuring the decoder. I used the Quantum Programmer to set both decoder manufacturer before pairing the shell back on the frame. The programmer features a command station mode that's capable of running several locomotives at once. I rang the 825 (speed) command I downloaded from www.quantumcomp.com to check the long run of the decoders using the "Motorized Locomotive Instructions" option.

The change the decoder's programmed control to stop at a 14F increment. I disconnected the 5.0V 5.3V sound tab and traded it into the QSI/quantum program. From there I was able to customize motor effects, such as changing the volume to a Louder 64.

I then used the "Configure Light Parts" feature to purge the Chief Road Reverse lights to port 1. I clicked the "Upgrade Functions" button to download the instructions into the decoder while the locomotive was on the test track. Upgrading the decoder takes a few minutes, so I use each as a complete before leaving the locomotive.

I ran the locomotive on my test track using the Quantum Programmer to make sure the various sounds and lighting effects worked. The horns came on with the headlight, and the sound volume was just how I wanted it. Everyone the locomotive was backwards, so I used 3-14 to reverse the directions.

Many of us have plain 14, locomotives. Thanks to modern decoders and software, these models no longer have to be relegated to the display case as a silent, forever. You can be upgraded with features, sound and lighting effects, taking full advantage of the capabilities of DCC. **MRR**

Have any questions about Digitrax command control or this Quantum Mode Nationwide equipment, PO Box 4123, Hagerstown, MD 21741, or e-mail dcc@mrr.com. We regret we can't answer all the questions we receive.

Table 1. Maintenance and Inspection Summary

12 MONTHS - Minimum 24 Car Interior Inspected for Certification	
3.1 Suspension	Pass
3.2 Wheels	Pass
3.3 Diagnostic	Pass
3.4 Electrical	Pass
MECHANICAL INSPECTIONS are required for Certification	
2013 1.1 Axle Interface Lubrication	1 of 12
2013 1.2 Wheel Condition	Pass

Note:
Wheel Detail is made 12 Inspections when required 1 Axle

Jacksonville Chapter, NMRA
Michigan, Mackinac & Southern Railroad

The Research & Test Car is a Diagnostic and Inspection Car. Inspections are performed at the Annual Meet for Certification. Visiting members are encouraged to participate. The Car is scheduled to be found at the Annual Meet. Check the Annual Call for a schedule. The Inspection Report is made a requirement for Certification.

Prototype Overview
Atlas GP38-2 Phase 1

by Gene Broome

The end of railroad "steam" brought an immediate, dire, early 1950s problem: what locomotive the railroads were going to buy next? Fuel costs were dramatically just like they're starting to bite now as the generation existing in Oil Arab Prices and Vogue, the railroads were also affected. Locomotives with heavier gas mileage because a price tag. EMD responded with its 16-cylinder GP38-2 series, which was essentially a redesigned version of the 16-cylinder GP38-2. Actually, the first GP39 was delivered in 1965 just before the gas crunch. At that time the railroads preferred the proven GP38. Only 33 GP39s were sold, most of which went to the Chesapeake & Ohio.

"Whether energy or not is the issue, EMD's upgraded to GP39 or the GP39-2 [engine] was a very beneficial and good operation at higher elevation with more selling points. Between 1974 and 1986, 2,395 GP38-2s were delivered. Power for the GP39-2 consisted of the EMD 645E3 diesel engine which produced 3,000 hp.

As with most locomotive production runs, orders hinged — also contributed to by options or 'phases' — were made along the way. The GP39-2 had two major phases during its production. Phase 1 was produced between 1973 and 1974. Phase 2 ran from 1977 through 1986. The most noticeable difference between Phase 1 and Phase 2 is the location of the air intakes, blower doors, and skirts. For Phase 2, the engine was moved outward about three feet, carrying the associated appliances to the rear. The original Phase 2 customers included Santa Fe, Reading, Delaware & Hudson, and Kennecott Copper.

Bachmann

Northern, Missouri Kansas Texas, Phillipsburg, and Reading who became buyers of new GP39-2s with the introduction of the Phase 2 version. Through energies and trades the GP39-2s moved to several other railroads and some still in service today.

Atlas is offering both Phase 1 and Phase 2 GP39-2s in HO scale as part of its Trainman product line. The sample provided to MMRA Headquarters was a Phase 1 GP39-2 decorated in CSX paint scheme. Besides CSX, the Phase 1 Group is available in multiple roads numbers for BNSF, D&H, lightning stripe, Conrail Blue, yellow, Reading Union Pacific, Portland & Western, and Santa Fe. An undecorated version is also available. The Phase 2 locomotives are available in BN, BNSF, Iron, and Santa Fe

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Trackside Photos

Union Pacific Electro-Motive Division EDHO-2s lead a mainline freight over the 182-foot-high Kyle River Bridge. Daryl Kruse of Rochelle, Ill., photographed the scene on his N-scale layout, featured in Great Model Railroads 2004.

Rio Grande Southern 2-8-0 no. 19, a Sunset Models brass import, works its way upgrade near Ames (Jeff Gerow, Ferguson's Old Mill layout). The boxcars behind the locomotive are San Juan Car Co. models assembled by Bob Lahara. Dennis, of St. Paul, Minn., took the photo.

A clean locomotive on a bright, sunny day — you can't ask for much more when you go trackside. Gary Hoover of Florissant, Mo., caught a virtually spotless CSX Dash 8-44CW on the point of a priority freight near the hillside community of Oak Grove, Ill. The HO scale action takes place on Gary's old Missouri, Kansas & Quincy layout, featured in the June 2005 Model Railroader.

The quiet of rural Iowa is temporarily interrupted by the roar of a passing train. Here a Chicago & North Western (CNW) and two St. Louis Southwestern (SSW) hustle a unit grain train across an HO scale trestle surrounded by fall colors. Ed Van Laten for the Midwest Model Railroad Club, Mott Woods of Cedar Rapids, Ia., took the photo.

Sometimes rail photography is all about being in the right place at the right time. Pierre Vinh photographed this five-unit consist of CP Rail C-420WA and C-424s in front of the Pont-Rouge station. The crew of the westbound freight is waiting for a relief crew to arrive. Pierre took the photo on his Nikkormat (HE) scale layout in Montreal, Quebec, Canada.

The Last Word . . . With Ed Ripley

Tunnels, Ports, and Politics

Joe Erickson

New York City politicians believe a proposed rail tunnel could revitalize the city's waterfront.

Proposals to build a freight tunnel under the Hudson have been around a long time—77 years to be exact

Today we commonly associate any bold vision with the phrase "pharaonic undertaking." But what, exactly, does that mean? Is it a reference to the Egyptian pharaohs who built the pyramids? Or is it a reference to the Egyptian pharaohs who built the pyramids?

The city of New York, it's safe to say, has a pharaonic history. Its skyscrapers, bridges, and tunnels have long been the envy of the world. The city's very existence is a testament to the ambition, ingenuity, and sheer willpower of its people. But it's also a testament to the fact that the city's leaders have always been willing to think big, to take risks, and to spend money on projects that others might consider foolhardy.

The Brooklyn Bridge, for example, was once considered a ridiculous idea. The Holland Tunnel was a feat of engineering that many thought was impossible. The George Washington Bridge was a monument to the power of the automobile. And the Verrazzano-Narrows Bridge was a symbol of the city's determination to overcome its geographical isolation.

But not all of the city's pharaonic projects have been successful. The Second Avenue Subway, for example, has been under construction for more than a century, and it still only runs for a few miles. The Cross-Bronx Expressway, which was supposed to relieve traffic congestion, ended up creating it instead. And the World Trade Center, which was supposed to be a symbol of the city's resilience, ended up being a symbol of its vulnerability.

So what does all of this have to do with the proposed freight tunnel under the Hudson? Well, it's a reminder that the city's history is full of both triumphs and failures, and that any project of this magnitude is going to be controversial. It's also a reminder that the city's leaders have always been willing to take risks, even when the odds are against them.

The proposed freight tunnel would run from a new rail yard in New Jersey to a new rail yard in Queens, and it would be designed to carry freight trains that are too large to fit through the existing tunnels. The project is estimated to cost $10 billion, and it would take about 10 years to complete. It's a big project, but it's also a project that could have a significant impact on the city's economy.

The tunnel would be built by a consortium of companies, including the Port Authority of New York and New Jersey, the New York City Economic Development Corporation, and the New Jersey Transportation Development District. The consortium would be responsible for raising the money to build the tunnel, and it would also be responsible for operating it once it was built.

The project has been met with a mixed reception. Some people think it's a great idea, while others think it's a waste of money. The project's supporters argue that it would create jobs, boost the economy, and reduce traffic congestion. Its opponents argue that it would be too expensive, that it would cause disruption during construction, and that it would not be necessary if the city's existing infrastructure were properly maintained.

The project is still in the early stages of planning, and it's not clear whether it will ever be built. But it's a project that has the potential to have a significant impact on the city's future, and it's worth paying attention to.

Coming in the June

RailNews

•What's New: Modern Railroading, as seen by artist Ted Rose

•Diary of an Amtrak Journey across the United States

•BNSF's Rarely Visited Former Colorado & Southern Woodover-Denver line

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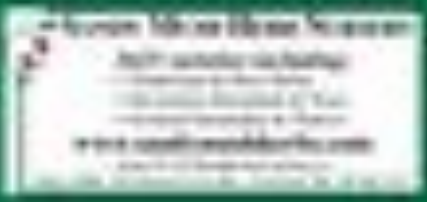

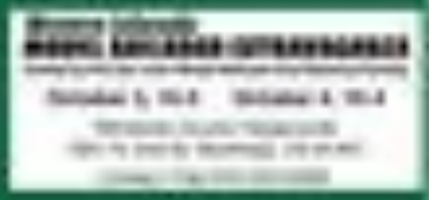

Directory of large-scale trade retailers

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Problematic purslane

By Name Here | Occupation, Area Name | Photos by the author

Purslane is an annoying plant. It's a portulaca (*Portulaca oleracea*) a group of succulents often used as garden cultivars. It's edible, too. People eat it in salads, soups, or other dishes. It was reportedly Cleopatra's favorite food! And it's very hardy. Through it's an annual, it reproduces by making thousands of seeds, which can be dormant for years until the conditions are right for sprouting.

Honestly, I've never considered it a favorite. But then, I love food and was like blind. When a wild purslane appeared in our herb garden, right at mine years ago, I was happy to leave it. It seemed and a nuisance. I assumed, would be a happy plant with minimal watering. And as edible, why not? How could that be bad?

It brought back lots and lots and I can't quite recall purslane, but there was some I welcomed it, cozy and tended around it as it grew into other succulents.

Then this drought started. I am constantly thinking about the water bill and how I can cut back. I realized why everyone else hated purslane. There has to be some problem! Between 60 and 70 million seeds. There has to be some

Early warning sign of a purslane infestation.

means because I couldn't get outside or cannot leave all. It seemed actually not very eccentric and the purslane (which is currently weeds) honestly seemed to be more appealing and also cuter with a completely low above our outdoor deck.

When the rain finally scrapped the outdoor was a disaster area. In addition to damage from the water, the sight of any was interrupted by purslane. So desperate to, I pulled up much of the yard and we covered the 20 x 40 foot area with black plastic. Hoping to smother the evil before she overpowered 200 million seeds sprouted the next spring.

After a season of sharing in this space, I

Have you learned a garden lesson?

I'd love to share it in 300-500 words, with up to three photos. Send your contributions to "If I'd only known," Lisa Ann Robinson, 3911 Bee Ridge Rd., Sarasota, FL 34233, USA, or email editorial@gardenenvelope.com.

was relieved to find that the general consensus from all of my plant friends, ready to share was that purslane was a nice ground cover for the garden during summer. It was a target of pollinator species, so there as more on a shady area.

This year I have managed to keep it under a less control. The rains have been sporadic, so I'm able to get into the yard with the spinner once a week and locate the new sprouts with glyphosate. I've not thrilled about spraying gallons of herbicide on the yard, but then you to only locate hotspot. It's the only way to keep my gardens from looming over a jungle of purslane again.

Growing purslane seems to be like getting evidence. If you ever talk one, but you are going to struggle to control it and be susceptible. Once in the yard at your life, it'll last only because what a battle it was going to be. I would have dug up that first plant. The next is it thinks it is an entire network before you are one kind of a situation take more to even care!

The Southern Pacific GS-4 #4453 has arrived at last! Another gorgeous locomotive from the Southern Pacific's steam roster, the SP GS-4 #4453 can work in tandem with #4449 to pull trains #98 or #99 along the Pacific coastline, the two locomotives trading duties going back and forth between their respective destinations. Increase your enjoyment with the addition of an N Yard Crew Daylight which includes engineers perfectly sized to fit in the GS-4's detailed cab.

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GS-4 steam hauling train #98 from Los Angeles to San Francisco, departing 8:10am. This journey will take the 18-car consist past 471 miles of California coastline before arriving at its destination in northern California.

GS-4 steam hauling train #99 from San Francisco to Los Angeles. The westbound portion of this beautiful train ran southbound during the day just "Daylight" trains were day trains, which is why they backed alongside down to the Los Angeles Union Passenger Terminal (today known simply as "Los Union Station").

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